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BUFFON's

NATURAL HISTORY

OF

OVIPAROUS QUADRUPEDS

AND

SERPENTS.

VOL. I.

THE

NATURAL HISTORY

OF

OVIPAROUS QUADRUPEDS

AND

SERPENTS.

ARRANGED AND PUBLISHED FROM THE PAPERS AND COLLECTIONS OF THE

COUNT DE BUFFON,

BY THE

COUNT DE LA CEPEDE,

KEEPER OF THE ROYAL CABINET, AND MEMBER OF THE ACADEMIES AND SOCIETIES OF DIJON, LYONS, BOURDEAUX, ROME, STOCKHOLM, &c. &c.

IN FOUR VOLUMES,

ILLUSTRATED WITH COPPERPLATES.

TRANSLATED BY

ROBERT KERR, F. R. & A. S. S. Ed.

VOL. I.

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1802.

PREFACE

BY THE TRANSLATOR.

THOUGH The Natural Hiſtory of Oviparous Quadrupeds and Serpents, a tranſlation of which into Engliſh is offered to the public in the following volumes, was originally publiſhed in French under the name of the Count de la Cepede, it is yet certainly to be conſidered as a part of the *General and Particular Natural Hiſtory* of the Count de *Buffon*; and the Count de la Cepede muſt only be viewed as the *Editor* of this portion of that great work. The whole vaſt plan was conceived by Buffon; and that great naturaliſt executed ſeveral extenſive portions

of his ſyſtem, in conjunction with different coadjutors; and, from the very beginning of the undertaking, *he* had taken every poſſible care to prepare materials for all the parts, by means of correſpondence in almoſt every quarter of the globe; by collecting notes from every author of merit; by ſpecimens and drawings of all the ſpecies, in the various claſſes, that could be procured; and by obſervations on the manners and habits of the ſeveral living individuals that occurred. Finding the execution of the whole of his plan impoſſible for the labour of one man, he very early committed the conduct of particular parts, and ſubdiviſions of parts, to other naturaliſts in whom he could confide for abilities and ſimilarity of views; conſigning to them, for their aſſiſtance, all the preparatory materials which

he

he had collected and all the channels of information which he had secured. He afterwards confined his own attention to the finishing of such other parts as he conceived might still be overtaken by himself.

It is well known, that he received very considerable assistance from M. Daubenton, in the conduct of the General and Particular Natural History of Quadrupeds, which has already been so ably given to the English reader by MR SMELLIE. The assistance which he received from M. Montbelliard in the General and Particular Natural History of Birds, which has likewise been excellently rendered into English, is equally known and avowed. That the Count de la Cepede only put together the materials collected by his master, *Buffon*,

and raiſed the ſuperſtructure in ſtrict conformance to the plan of that celebrated Naturaliſt, will diſtinctly appear from the following account prefixed by himſelf to the original French of this work. When a great architect has formed the plan of an extenſive and elegant building, exquiſitely contrived in all its parts for anſwering the purpoſe of its deſign, even though he ſhould find it neceſſary to conſide the execution of ſome of its conſiderable parts to the care of his diſciples; theſe parts muſt aſſuredly be conſidered as the works of the maſter, according to whoſe plans, and purſuant to whoſe inſtructions, they have been executed, and not as belonging to the genius of the diſciple, who had only to draw out the working plans at large, and to ſee the proper application of theſe to the manual conſtruction.

INTRODUCTION

INTRODUCTION

BY THE

COUNT DE LA CEPEDE.

WHILE the Count de Buffon was engaged in writing the Natural Hiſtory of the Cetaceous Animals, being anxious to ſee the General and Particular Natural Hiſtory completed, that vaſt work which his amazing genius had conceived and planned on ſo ſublime a ſcale, and of which he had executed the chief parts with ſo much elegance and ſucceſs, and finding that his health would not permit him to undertake every part of the immenſe detail, he committed the charge of this portion to me *.

* This paragraph is the adverti ſement prefixed by the Count de la Cepede to the Natural Hiſtory of Oviparous Quadrupeds. What follows is in like manner prefixed to the Natural Hiſtory of Serpents: They are here thrown together as tending both to the ſame point, to ſhew, that he is altogether to be conſidered as one of the coadjutors to Buffon, and not as the author of this work.—T.

No one can more ſincerely lament the death of the Count de Buffon than I do; being thereby deprived of his powerful aſſiſtance for carrying on the work which I now publiſh, and which I ſhould never have undertaken if he had not engaged to aſſiſt me in following that plan which he pointed out when he entruſted me with the charge of continuing his Natural Hiſtory. Some time before that event, ſo fatal to ſcience, one of the coadjutors of M. de Buffon, the eloquent author of a part of the Natural Hiſtory of Birds, and of the Preliminary Diſcourſe to the *Collection Academique*, was taken away from the ſciences; and, by his death, the great proſpects which the lovers of Natural Hiſtory had entertained were diſappointed In particular, I was thereby deprived of the aſſiſtance which I had counted on, from his great knowledge

in

in Natural Hiſtory, and from the excellence of his diſpoſitions. Luckily for me, many Naturaliſts, both of France and other countries, and particularly thoſe who have executed extenſive voyages for the advancement of natural knowlege, have contributed to leſſen the loſſes which I had ſuſtained in the death of theſe great men, by ſending or promiſing me a great number of very important obſervations; and I have moſt gratefully to acknowledge the advantages which I have already received, and which I muſt ſtill derive from theſe communications in the progreſs of this work. I have already made uſe of ſome of theſe in the volume now publiſhed, and ſhall employ the reſt in thoſe which are to follow.

The Marquis de la Billarderie, ſucceſſor

to M. de Buffon as intendant of the Royal Garden, who has reſolved to uſe his utmoſt exertions for advancing the natural ſciences, both by means of extenſive correſpondence, and by inſtituting different voyages and journies to thoſe countries which are moſt intereſting for natural hiſtory, has kindly promiſed to communicate ſuch obſervations as may reach him and are connected with my labours.

At the time of charging me with the execution of this portion of natural hiſtory, M. de Buffon put into my hands all the notes, letters, and manuſcripts, which he had received at different times, relative to the natural hiſtory of the animals of which I had to treat. Two months before his death, he conſigned to me all the manu-

ſcripts

ſcripts and original drawings which that excellent naturaliſt the late M. Commerſon had compoſed and procured, relative to the various claſſes of animals, during his reſidence in the iſle of Bourbon, to which place he had been ſent by the government. M. de Buffon has already publiſhed ſuch of theſe manuſcripts as related to Viviparous Quadrupeds and Birds; and I ſhall be the more incited to enrich my work with thoſe which treat of the other animals, as theſe have been long anxiouſly waited for by naturaliſts.

The younger Count de Buffon, ſon to that great man whoſe death we deplore, who, having embraced the military life, will ſupport in the field of honour, the glory of that name which has become immortal in

the

the republic of letters, and his uncle, the Chevalier de Buffon, an officer of rank diſtinguiſhed for his ſervices, and long known by his taſte for the ſciences and the arts, have joined to communicate to me all the notes which were found among the papers of the late Count de Buffon, and which could in any degree be uſeful for the *continuation* of his Natural Hiſtory.

Beſides all theſe advantages, I have been greatly encouraged by the information which I am enabled to procure from M. Daubenton, with whom I have the honour of being united in friendſhip, and from whoſe ſuperior knowledge I have derived the greateſt aſſiſtance. Were I not afraid to offend his modeſty, I could with pleaſure expand in his praiſes; though, in ſo doing,

I ſhould only repeat what the public voice has already ſufficiently expreſſed, in all countries where natural hiſtory is cultivated. The learned world regretted the interruption of his labours in natural hiſtory conjunctly with M. de Buffon, and the ſuſpenſion of his deſcription of the Royal Cabinet; and I am now happy in announcing to the public, that the continuation of that branch of natural hiſtory may ſoon be expected, as M. Daubenton means to recommence at that part where he was formerly induced by circumſtances to deſiſt.

ELOGIUM

ELOGIUM

OF THE

COUNT DE BUFFON,

BY THE

COUNT DE LA CEPEDE.

WHILE preparing this diviſion of Natural Hiſtory, to complete the extenſive work which has been publiſhed by one of the firſt ornaments of France, that great philoſopher has finiſhed his glorious career. The approbation of his admirable genius, which was univerſal during his life through all the enlightened countries of the earth, has ſince been repeated in higher ſtrains of praiſe and admiration, though mixed with expreſſions of the deepeſt regret, for the irreparable in-

jury

jury ſuſtained by the ſcience of Natural Hiſtory, in conſequence of his death; and poſterity may already be ſaid to crown his ſtatue with never-fading laurels. Amid the numerous homages that have been tendered to his memory, would that I were able to raiſe the voice of eloquence in his praiſe, that I might engrave his Elogium in that ſanctuary which was conſecrated, by his tranſcendent genius, to the ſcience which he cultivated with ſo great affection and ſucceſs!

When Plato quitted this mortal ſtate to receive the crown of immortality, his weeping diſciples aſſembled on that famous promontory * near the celebrated City of Athens, on which they had ſo often liſtened to

* The promontory of Sunium, which is deſcribed in the Travels of the younger Anacharſis.

to the perſuaſive and impreſſing eloquence of their maſter; that ancient rock, waſhed by the ſurges of the reſtleſs ocean, where, ſitting among them, like the Father of the Gods on the ſummit of Olympus, Plato had ſo often unveiled the ſacred myſteries of virtue and of ſcience, they conſecrated to the memory of their beloved Father, conſidering it ever after as a holy place. Then, to diminiſh the ſenſe of their irreparable loſs, to beguile their grief, and to refreſh their recollection of the ſublime truths which he had taught, they compoſed and ſang a funereal hymn, and depicted in their ſorrowful verſes the traces of his tranſcendent genius, and the melancholy expreſſions of their own poignant grief.

We who are devoted to the ſtudy of Natural

tural Hiſtory, who have been taught by that great man, and who have liſtened to the voice of this modern Plato, may not we compoſe a funereal hymn in his praiſe! Aſſembled from various corners of the earth, where each of us hath cheriſhed that ardent love for the Science of Nature with which he knew ſo happily to inſpire his diſciples; may not we penetrate together even to the center of thoſe moſt ancient monuments which were conſtructed by the powerful arm of Nature; or may not we direct our ſteps to thoſe proud mountains whoſe lofty ſummits, involved in eternal froſt and ſnow, ſoar above the clouds, and ſeem to unite the heavens with the earth! On theſe enormous blocks of granite, theſe huge maſſes, which time ſeems to have attacked in vain, and which alone appear to have reſiſted the war

of

of elements, and to have endured amid all the revolutions which the earth hath experienced: On theſe tablets, reſpected even by the deſtroying hand of time, we would engrave the name of BUFFON; to theſe witneſſes of the ancient overturning changes of our planet, we would confide the memory of our deepeſt regret and moſt ardent admiration; all other monuments were of much too periſhable materials to bear the record of a renown ſo ever-during.

Let us, at leaſt in thought, raiſe our imaginations above theſe inacceſſible rocks; let us advance to the margin of thoſe terrible chaſms which ſurround them; and let us reach the ſummits of thoſe mountains which are ſucceſſively heaped on the tops of other mountains. Night ſtill ſtretches forth

forth her ſable wings; the clear firmament is unobſcured by even the ſlighteſt cloud, and the perfect tranſparency of the atmoſphere admits a thorough view of all the ſtarry hoſt; we ſee around the numerous fixed ſtars, ſhining by their own appropriate ſplendour, while the planets reflect to us the milder rays of their borrowed light. Abſorbed in profound meditation, we ſeem to behold *The Genius of Nature contemplating the Univerſe**. Every object recals to our imagination the lively imagery with which Buffon has every where ſo magnificently adorned his writings, and that moving picture of the heavens, which, with ſucceſsful boldneſs, he hath ſo grandly traced †.

* Alluding to the engraved frontiſpiece to the original edition of Buffons Theory of the Earth.

† This Picture is contained in the Introduction to Buffons Natural Hiſtory of Minerals.

Standing on the higheſt pinnacles of the earth, we thus chant our hymn of praiſe.

" We bow to thee, BUFFON, thou ſub-
" lime painter of the auguſt ſpectacle that
" ſurrounds us; thou, whoſe adventurous
" genius, ſtill unſatisfied, after ſurveying
" the immenſe expanſe of heaven, and the
" limits of extended ſpace, hath even pene-
" trated into the records of time *.

" Thou haſt required of matter to inform
" thee by what power the fixed ſtars, thoſe
" reſplendent central points of the univerſe,
" have acquired the fires with which they
" are perpetually illuminated.

" Thou

* See the article on the formation of the Planets in the firſt and ſecond ſyſtems of Nature, &c. by M. de Buffon.

" Thou haſt learnt of time by what mov-
" ing force thoſe wandering ſtars, which
" ſhine only in borrowed luſtre, and which
" circulate like ſlaves around their ſuns, di-
" rect their motions ; how they were placed
" in the celeſtial tracts which are allotted
" for them ; and by what means they were
" endowed with the movements which per-
" petually animate them.

" We bow to thee, O Immortal Poet of
" the Heavens ; may the firmament, all
" over-ſpangled with ſtars, may the light
" which is diffuſed through univerſal ſpace,
" and may the magnificent ſcenery of night,
" for ever recal the memory of thy glory !"

In the mean time, the firſt tints of ap-
proaching day gild the margins of the eaſt ;

the glorious ſun appears, in all his majeſtic ſplendour, reddening thoſe lofty ſummits which ſoar above the clouds, and ſeems to ſet on fire the vaſt ice vallies which ſurround the mountains. A murky vapour ſtill fills the lower grounds, and hides the hills from our view. A vaſt ocean ſeems to envelope the earth, and a few ſolitary pinnacles, ſplendidly covered with ice and ſnow, are ſeen above the ſurface of the immenſe ſea of miſt, whoſe hardly gravitating waves, agitated by the winds, and rolling in enormous billows, are raiſed into whirlpools, and threaten to overtop the higheſt rocks. We ſeem to behold, with Buffon, the earth ſtill covered by the waters of the ocean, and receiving, amid the waves, its form, its inequalities, its mountains, and its vallies.—Our hymn proceeds.—

" We

" We bow to thee, BUFFON, whoſe ſub-
" lime genius, after having embraced the
" whole immenſity of time and ſpace, hath
" hovered over our earth, and hath diſ-
" covered the Records of its moſt diſtant
" ages.*

" Thou haſt deſcried the earth, as it firſt
" roſe from the boſom of the waters, while
" the ſecondary mountains were heaved up
" by the accumulated force of the currents
" of the vaſt deep. The naſcent vegetables
" have unveiled to thee their verdant foli-
" age as they began to grow, on the firſt
" inequalities of the earth abandoned by
" the waters. In thy ſight, the firſt foreſts
" reſign their ruins to the mercy of the agi-

 tated

* See the Theory of the Earth, and the Epochs of Nature, by M. de Buffon.

" tated waves, and the abyſſes of the ocean
" treaſure up the precious charge to be-
" come magazines of heat and fire for
" future ages. Thou haſt carried thy re-
" ſearches into the valleys of the ocean,
" peopled with various animals, the veſtiges
" of which gave origin to new ſhores, or
" raiſed the level of thoſe which were al-
" ready formed.

" Thou haſt perceived the fire, as it burſt
" violently from the bowels of the earth,
" directly behind the retiring waves of the
" univerſal ocean, which contributed to
" raiſe the ſecondary hills, while it ſhook
" the more ancient primary mountains,
" and covered the plains with burning tor-
" rents of liquid lava; while the force
" of thunder and lightening, joined with
" tempeſts of wind, the fury of internal

fires,

" fires, and the power of the ſtormy
" ocean, all contributed to produce the
" ſame common effect, the deſtruction of
" the old, and reproduction of the new,
" ſurface of our globe.

" We bow to thee, whoſe ſublime elo-
" quence hath recorded all theſe grand ob-
" jects. May the fire of volcanos, the fury
" of the waves agitated by the ſtorms of
" heaven, and the irreſiſtible impetuoſity of
" the celeſtial thunder, continually recal the
" memory of thy never ending fame !"

The thick vapours are now diſſipated, and Nature in all her beauty lies open to our view; her vaſt extended plains, her fertile ſlopes, her flowery fields, and peaceable retreats, are all before us. The inha-

bitants of the air, ſporting among the thickets, addreſs their grateful ſongs to the Sun, the beneficent ſource of light and heat; the towering eagle ſoars above the higheſt tops of the mountains; the warlike horſe, erecting his flowing main, gambols acroſs the graſſy meadows; and all the diverſified forms of animals, which people and adorn the earth, ſeem to paſs in review before us*. Wrapt in ſerious enthuſiaſm, and carried along by delirium of imagination, we feel ourſelves elevated above the earth, and ſee the globe revolving under our feet, preſenting ſucceſſively every part of its ſurface to our view.

The cruel Tyger and terrible Lion are ſeen

* Conſult particularly, in the Natural Hiſtory of Quadrupeds and Birds, by M. de Buffon, the following articles; the Horſe, Tyger, Lion, Camel, Elephant, Beaver, Ape, Eagle, Parrot, Humming-bird, Kaimichi, &c.

ſeen exerting their bloody empire in the marſhy woods of Aſia and the burning ſolitudes of Africa; the patient Camel, enduring long continued thirſt, amid the parched ſandy deſerts of Arabia; the vaſt Elephant of India, aſtoniſhing even to human intelligence, by the extent of his inſtinctive faculties; the Canadian Beaver, demonſtrating, by perſevering induſtry, the wonderful effects of numbers and of union; the Apes and Monkies of both worlds, thoſe petulant mimics of the actions of mankind; the Parrots of the equatorial countries, cloathed in the gayeſt colours; the Humming-bird of the new world, with its ſplendid golden plumage; the wonderful Kaimichi of the half inundated coaſts of Guiana;—all paſs in review before our aſtoniſhed eyes.

Every

Every thing contributes to preſent to our imagination all thoſe objects which Buffon hath adorned by the wonderful powers of his eloquence. In the midſt of all theſe ſubjects of his inimitable deſcription, we obſerve, in every quarter of the habitable globe, MAN, the maſter-piece of creative power; who, by the aid of thought, hath acquired poſſeſſion of the Scepter of Nature, hath conquered even the elements, hath fertilized the earth, hath embelliſhed his reſidence, and hath given exiſtence to happineſs, by means of Love and Virtue.

From the regions which lie beneath the pole and the celeſtial bear, from the utmoſt limits of the vaſt empire of the ſovereign of the Neva *, and from that country, fertile in

* It is chiefly from Ruſſia, and from North and South America, that the ſubjects of Natural Hiſtory have

in a race of heroes, where Reinſberg * ſees the arts of peace cultivated by the hands of victorious warriours, even to the ſultry plains of Mexico, and the ſummits of the Andes. There is not ſeen a corner of the earth which does not remind us of the tributes which have been offered to the genius of Buffon.

In the modern Athens, among all thoſe famous

have been eagerly tranſmitted to M. de Buffon. Even ſeveral ſovereigns, particularly the Empreſs of Ruſſia, have contributed largely to ſupply him with intereſting ſpecimens.

* Reinſberg is a caſtle in Brandenburg belonging to Prince Henry of Pruſſia. M. de Buffon uſed to ſpeak with rapture of his attachment for that Prince; and was delighted to recount the marks of eſteem which he had received from him, and to dwell on the friendſhip which the worthy companion of the great and celebrated miniſter of the beſt of kings had always teſtified for him.

mous places, consecrated to science or to the sublime arts of eloquence and poetry; in those temples of fame, where the name of Buffon, and the remembrance of his glory, shall ever endure; there, where he has left many friends and associates of his honourable labours, one especially, who, born in the same country, and connected with him from their earliest days, hath shared his labours and his successes; we seem to join the united voices, the harmonious chorus, of genius and of friendship, which penetrates our souls, and we thus continue our hymn:

" We bow to thee, O BUFFON! who, " to thy harmonious lyre, hast sung the " works of Creation; to thee, who, with a " masters hand, on a monument more du-

" rable

" rable than braſs, haſt graved the auguſt tra-
" ces of the KING of NATURE; who haſt
" followed HIS majeſtic ſteps through eve-
" ry clime, from the inſtant of HIS birth till
" HE diſappeared from the earth. At thy
" voice Nature hath collected her various
" productions to paſs them in review be-
" fore thee; that thou mighteſt deſcribe
" their forms, their features, their habits,
" their countries, their characters, and their
" names. Sublime Poet of Nature, may
" thy ſongs be repeated throughout the
" whole earth, and may every thing and
" every place re-echo with thy name; for
" thou haſt celebrated all the Exiſtences and
" all the Epochs of Nature!"

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ERRATA.

Page 118, l. 7, for fifteen inches, read fifteen feet.

205, l. 3, for XIX. read XVIII. and alter the subsequent numbers to the end of the Genus in this manner.

212, l. 1, for III. read XXIII.

235, l. 10 and 11, for Κροκοσειλος, read Κροκοδειλος.

369, side note, for Guana, read Agama.

NATURAL HISTORY

OF

OVIPAROUS QUADRUPEDS.

DISCOURSE ON THE NATURE OF OVIPAROUS QUADRUPEDS.

Preliminary Diſcourſe.

WHEN we throw our eyes around, and view the innumerable multitudes of living organized beings, which inhabit and animate the earth, our attention is firſt arreſted by the viviparous quadrupeds and birds, of which the forms, qualities, and manners have been already deſcribed, in an immortal work, by the hand of Genius itſelf. Among thoſe other objects, which attract our notice, the oviparous quadrupeds come next in order; Theſe approach very near to the more no-

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ble animals, of the two firſt claſſes, in their ſtructure, in the number of ſenſes with which they are endowed, in the warmth with which they are penetrated, and in their manners and habitudes. The general name, by which they are known, diſtinguiſhes the moſt remarkable property in which they differ from viviparous animals, by indicating that their young are produced from eggs. They likewiſe differ from viviparous quadrupeds, by the want of duggs, and by having no hair, inſtead of which they are cloathed with a horny cruſt, with hard or ſharp pointed ſcales, with knobs or tubercles, of a greater or leſſer degree of prominence, or their ſkins are naked and ſmeared with a viſcid liquor. Inſtead of having their legs extended perpendicularly, like thoſe of viviparous quadrupeds, theirs are bent and ſeparated, in ſuch a manner as to raiſe their bodies very little from the ground, on which they ſeem rather to crawl than to walk. From this laſt property, they have been comprehended under the general name of *reptiles*, which

which however we have not here adopted, as that name ought more properly to belong to the ſerpent tribe, and to thoſe other animals which, almoſt or altogether deprived of legs, change their place by applying their bodies to the ground *.

In this claſs, the ſpecies are by no means ſo numerous as in that of viviparous quadrupeds: In the latter, M. de Buffon and M. Daubenton have given the hiſtory and deſcription of more than three hundred ſpecies, while in the one now before us we only know of one hundred and thirteen. It muſt, however, be acknowledged, that there is great difficulty, both in aſcertaining the number that really exiſt, and in avoiding to enumerate more than are actually known. Voyagers and travellers have given leſs attention to this than to

* Conſult, on this ſubject, the excellent work on oviparous quadrupeds and ſerpents, by Mr Daubenton, in the Encyclopedie Methodique. We take this early opportunity of acknowledging the aſſiſtance derived from his valuable writings, and from his friendly communications, in the preſent publication.

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any other claſs of animals, and they have very generally formed ſuch accounts as we have of them, either from the vague reports of others, or from very ſuperficial obſervations, and have ſatisfied themſelves with giving them very ill-founded appellations. Having very ſeldom been at pains to collect accurate information on the ſubject, they have frequently given the ſame name to various ſpecies, or different names to the ſame individual. How many abſurd fables have been reported concerning theſe animals? becauſe they have moſt commonly been ſought after, for the ſake of chymerical or exaggerated properties; becauſe they really, at leaſt for the moſt part, poſſeſs uncommon qualities; and becauſe the accounts of ſuch objects, as are rare or brought from a diſtance, readily acquire embelliſhment, or are diſfigured, in paſſing through the medium of a warm imagination *. Travellers have ſeldom ſufficiently

* In the works of Conrad Geſner, de Quad. Ovip. may be found recorded, all the real or abſurd properties, which belong, or have been attributed to, theſe animals.

ciently discriminated the essential characters and principal properties of each species; and, even when they have given us exact descriptions of their external forms, have too often omitted to add the history of their manners, qualities, and habitudes; or, when these last have been properly attended to, have neglected to subjoin a precise description, by which they might afterwards be certainly recognized from others.

Hence, when we had resolved to attempt illustrating the natural history of oviparous quadrupeds, we found that it was not sufficient merely to examine attentively, and carefully to describe, the great number of these animals, which are contained in the royal cabinet, together with such as have been particularly procured for us elsewhere, of which several are hitherto unknown to naturalists; it was not only necessary, in addition to these cares, to collect almost the whole observations, on this class of animals, which have been hitherto published, together with such particulars as have been communicated to us, or have

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been made by ourſelves on living ſpecimens; we have been forced to compare all theſe, with the conformation of the ſpecies to which they relate, with thoſe other properties of the animals that are thoroughly eſtabliſhed, with the known circumſtances ariſing from the influence of climate, and more eſpecially with the laws of nature, which never vary. It often required the niceſt application of all theſe rules of judgment, to aſcertain the truth or fallacy of numbers of theſe reported facts, or to diſcriminate, among ſuch as were well authenticated, which ought to be conſidered as conſtant properties, reſulting from the ſtructure of a whole ſpecies, and which of them were only to be referred to ſingle individuals, as modifications of particular inſtincts, improved or diminiſhed by accidental cauſes.

Before proceeding to a detailed account of facts, in the particular hiſtory of the ſeveral ſpecies, we ſhall take a general view of the claſs of oviparous quadrupeds, as a whole; and, for this purpoſe, it will be

neceſſary

neceſſary to ſurvey the circumſtances of thoſe tropical regions, where, animated by the greateſt atmoſpheric heat, which is abſolutely neceſſary for them, the largeſt of theſe animals are to be found. From Egypt, periodically overflowed by the waters of an immenſe river, whoſe banks, widely covered by mud, preſent a habitation every way fitted for the manners and nature of oviparous quadrupeds, where the trees, the foreſts, the ruins, and even the lofty pyramids, furniſh us with numerous ſpecies; from the torrid coaſts of Africa, particularly the banks of the rivers Senegal and Gambia; from the half drowned coaſts of the new world, thoſe deep ſolitudes, ſo admirably adapted, by their heat, moiſture, and tranquillity, for the animals of this claſs; from the rich countries of the eaſt, where nature ſeems to have diſtributed all her productions with a laviſh hand; from the numerous iſlands of the torrid zone: From all theſe regions we muſt collect, in our imagination, all the oviparous quadrupeds which people their various parts,

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and, ranging them around us, make them paſs in review, and compare them with each other, that thus we may become acquainted with their natures, forms, and properties.

We ſhall firſt conſider the various ſpecies of the tortoiſe, as more nearly reſembling the viviparous quadrupeds in their internal ſtructure; beginning with thoſe which inhabit the ſea-coaſts, proceeding to thoſe which prefer the freſh water, and to thoſe again which dwell on dry ground in the middle of the woods. We ſhall next conſider the enormous crocodiles, which, inhabiting the waters of the great rivers, appear like giants at the head of the various legions of lizards: In this part of our ſurvey, we perceive that theſe animals have a vaſt variety in their ſhades of colour, great diverſity in the conformation of their organs, and infinite diſproportion in their ſize, from a length of twenty-five or thirty feet, down to a few inches. In the next place, we ſhall obſerve a ſet of ſtill ſmaller oviparous quadrupeds, which nature

ture seems to have confined to the sleech of marshes, on purpose that life and motion should every where abound. Notwithstanding the astonishing diversity which subsists among these tribes, we shall find that they all possess certain points of resemblance among themselves, which unite them together, and that they differ from all other animals, by regular characters and remarkable qualities: We shall investigate these distinctive characters, and shall, in the first place, consider what degree of life and of activity has been allotted by nature to the oviparous quadrupeds.

Animals differ from vegetables, and more especially from inorganized matter, in proportion to the number and activity of the senses with which they are endowed; which, by making them more or less sensible to impressions from external objects, connect them with these in a more or less intimate degree. Wherefore, to ascertain the place which belongs to oviparous quadrupeds, in the scale of being, we must observe the number and the power of their senses.

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ſenſes. They are all provided with the ſenſe of ſeeing, and moſt of them have their eyes conſiderably protuberant, and of conſiderable magnitude in proportion to that of their bodies. Being, for the moſt part, inhabitants of the ſhore of the ſea, and of rivers, in the torrid zone, where the ſun is ſeldom obſcured by clouds, and where the rays of light are ſtrongly reflected from the waves and from the ſand, it is neceſſary that their eyes ſhould be of ſufficient ſtrength, not to be injured, and even deſtroyed, by the exceſſive influence of the light with which they are continually filled: Hence, the eye ought to be extremely active in theſe animals, and accordingly we find that they perceive objects at a great diſtance. We farther obſerve a particular conſtruction of the eyes of ſeveral of theſe animals, which indicates conſiderable delicacy and ſenſibility in the organ: Moſt of them have a membrana nictitans, ſimilar to that obſerved in birds; and a great part of them have the faculty of contracting and dilating the pupil, in a very

very conſiderable degree, as in cats *, on purpoſe either to admit ſuch a quantity of light as may be neceſſary, or to prevent an over proportion of the rays, that might be hurtful, from entering their eyes. By this means they are enabled to diſtinguiſh objects, both in the dark and in the moſt brilliant ſunſhine; their ſight is, at the ſame time, very much exerciſed, and preſerves its moſt perfect delicacy of perception, as it is never overſtrained by the influence of too great a degree of light.

Were we to find an equal perfection, in all the ſenſes of oviparous quadrupeds, as in the organ of ſight, we might certainly conſider them as poſſeſſing very great ſentient powers; but the organ of hearing is much leſs ſenſible in them, than in viviparous quadrupeds and birds. Their internal ear does not contain all the contrivances, which aſſiſt the perception of ſound, in the ears of theſe other two claſſes †; and the ſimplicity,

* See the hiſtory and deſcription of the Cat, by Buffon and Daubenton.

† See Vicq. d'Azyr, on the organ of hearing of animals,

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ſimplicity, with which this organ is conſtructed, is by no means compenſated for by a greater degree of ſenſibility, for in general it is of ſmall extent; beſides which, it wants the aſſiſtance of the convoluted external ear, which, collecting the undulations of ſound, as the rays of light are united together by burning mirrors, thereby increaſes the number which reach the real ſeat of hearing, and might ſupply, in a great meaſure, the imperfection or want of ſenſibility of the internal ſtructure *. In place of external ears, oviparous quadrupeds are provided with ſmall holes, through which only a ſmall number of ſonorous rays or undulations can paſs. We may, therefore, conclude that the organ of hearing is conſiderably leſs ſenſible in this, than in the two former claſſes: And, in addition to theſe remarks, we may obſerve, that moſt of theſe animals are altogether dumb, or only emit hoarſe, diſagreeable, and

mals, in the Memoires of the Academy of Paris for the year 1778.

* See Muſchenbroecks Phyſical Eſſays.

and confuſed ſounds; from which we may conclude, that they do not receive any very diſtinct impreſſions from external ſounds, ſince it is extremely probable that the habit of diſtinct hearing ſhould readily produce the power of an equally diſtinct utterance. It may, perhaps, be objected to this reaſoning, that, in moſt of theſe animals, the organs of voice want thoſe parts which ſeem chiefly neceſſary for the formation of ſounds, and that it is conſequently incapable of producing the diſtinctneſs of tone or of pronunciation, ſo neceſſary for the formation of any kind of language: But this is a farther proof of the imperfection of their ſenſe of hearing; as, however delicate it might be in itſelf, it muſt participate in the imperfection of their organs of ſound *.

There is reaſon to preſume, that the ſenſe of ſmelling in oviparous quadrupeds is far from being delicate. In general, ſuch animals

* See, on this ſubject, a Memoir by M. Vicq. d'Azyr, on the voice of Animals, in the Memoires of the Academy of Paris for the year 1779.

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animals as poſſeſs this ſenſe in an exquiſite degree, are leaſt able to indure ſtrong ſmells, and, when forced to remain too long expoſed to ſuch, their organs become blunted, and loſe their ſenſibility. Moſt of the oviparous quadrupeds inhabit amid the infected vapours of ſlimy ſhores, or of marſhes filled with putrefying organized bodies; and ſome of them exhale a diſagreeable odour from their own bodies, which becomes extremely ſtrong, when they are collected together in conſiderable numbers. Beſides, the organ of ſmelling is not very apparent in the animals of this claſs, except in the crocodile, and their noſtrils have but ſmall openings. However, as theſe ſeem to be the moſt ſenſible of the external organs, and as the nerves which terminate on them are extraordinarily large in ſeveral ſpecies *, we may conclude that ſmelling is the ſecond ſenſe of theſe animals, in degree of activity.

The ſenſe of taſting ought to be ſtill weaker

* See Memoires for forming a natural hiſtory of animals; article, Land Tortoiſe of Coromandel.

weaker in this claſs; for, this ſenſe muſt be in proportion to the ſenſibility of its organ, and we ſee that in general the tongue is either ſmall or covered with a ſlimy fluid, and is thereby very ill calculated for the ready tranſmiſſion of impreſſions from ſapid bodies.

The ſenſe of touch, or feeling, muſt likewiſe be conſidered as very blunt or imperfect in oviparous quadrupeds. Moſt of them are cloathed in hard ſcales, bony coverings, or ſolid ſheilds, which muſt greatly obſtruct the communication of impreſſions, ariſing from the contact of other bodies. Several ſpecies have the toes united together, in ſuch a manner as to prevent their being readily applied to the ſurface of objects; and though ſome lizards have their toes very long and much ſeparated, yet the under ſurfaces of theſe toes are often covered with ſcales, of ſufficient thickneſs to deſtroy all nice ſenſibility in theſe parts.

Thus, the claſs of oviparous quadrupeds are poſſeſſed of an equal number of ſenſes with the more perfect animals; but all their

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their ſenſes, except that of ſight, are ſo weak, in compariſon with thoſe of viviparous quadrupeds, that they muſt receive much fewer impreſſions through them, muſt communicate ſeldomer and leſs perfectly with external objects, and muſt be leſs ſtrongly and leſs frequently excited to internal action, in conſequence of theſe. Hence ariſes that coldneſs of affection, that apathy, that confuſed inſtinct, and thoſe indeciſive movements, which are ſo apparent in many of theſe animals.

From this weakneſs of their ſentient organs, in all probability, their internal organization is modified, in ſuch a manner as to diminiſh the energy of their motions, to retard the courſe of their circulating fluids, to leſſen the force of friction, and thereby to diminiſh the internal heat *, which originating

* This hypotheſis might formerly have appeared very plauſible; but it is now known that animal heat is produced by a real, though ſlow, combuſtion of charcoal, and perhaps likewiſe of hydrogen, which takes place in reſpiration: Conſequently the ſmall heat of theſe animals is diſtinctly owing to their leſs frequent reſpiration, produced by the organization of their heart and lungs.—T.

ginating from life and motion, reciprocally nouriſhes both; or, perhaps, this weakneſs of their ſenſes, may be occaſioned by the ſmall degree of animal heat, with which oviparous quadrupeds are endowed: At any rate it is certain that their blood is colder than that of oviparous quadrupeds and birds. Experiments, indeed, are ſtill wanting, or at leaſt have not yet been made with ſufficient accuracy, on the heat in crocodiles, large tortoiſes, and other oviparous quadrupeds of diſtant countries. The degrees of this heat muſt neceſſarily vary in different ſpecies, ſince they inhabit very different latitudes; but it is well aſcertained that it is in the whole claſs conſiderably below that of the viviparous quadrupeds, and ſtill more below that of birds; for, otherwiſe, they would not become torpid, in a degree of cold leſs than is neceſſary to induce hybernation in birds and viviparous quadrupeds.

The blood is much leſs abundant in the animals of this claſs than in the two former*. The blood is able to circulate for a

* Haſſelquiſt, who diſſected a crocodile at Cairo in 1751,

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great length of time, without being allowed to pass through the lungs; of which circumstance the following fact is a striking proof: A tortoise had the artery tied which communicates from the heart to the lungs, and, though, in addition, the lungs were laid open and cut in several places, it continued to live for four days. The lungs seem to receive no more blood than is barely necessary for their nourishment*. Hence, the blood of oviparous quadrupeds becomes thickened, from being less frequently animated,

1751, informs us, 'That the blood, which was thin 'and watery, did not run in any large quantity when 'he cut the aorta; the vessels of the lungs, and of the 'muscles, and in general all the smaller vessels of the 'body, were almost empty of blood. The blood there-'fore, he adds, is by no means so abundant in croco-'diles as in viviparous quadrupeds, and the same thing 'may be observed of all the amphibious class.' Hasselquist, after Linnaeus, comprehends all the oviparous quadrupeds and the serpents under this name.—See Travels into Palestine, by Frederic Hasselquist, Member of the Stockholm Academy of Sciences.

* See Mem. for a Nat. Hist. of An. article Land Tortoise of Coromandel.

mated, renewed, and revived, ſo to ſpeak*, by the influence of the atmoſpheric air, which penetrates into the lungs in reſpiration. Beſides it only receives and communicates tardy and almoſt imperceptible motion; for it has been long known that, in moſt of theſe animals, particularly in frogs, the blood moves ſlower than in the two former claſſes. Thus internal combine with external cauſes, to diminiſh the activity of the internal organization in oviparous quadrupeds. Preliminary Diſcourſe.

The bony fabric is more ſimple in the oviparous than in the viviparous quadrupeds. Several diviſions of theſe animals, particularly moſt of the ſalamanders, frogs, and toads, have no ribs. The tortoiſes have eight vertebrae of the neck; but, except the crocodile, which has ſeven, moſt of the lizard tribe have no more than four, and all thoſe animals of the claſs which have no tail are entirely deprived of articulations in

* The real uſe of reſpiration, and of the large quantity of blood which paſſes through the lungs in ſome animals, is already hinted at in a former note—T.

Preliminary Discourse.

this part of their bodies; while, on the contrary, birds have never fewer than eleven, and viviparous quadrupeds have always seven*. The inteſtinal canal of oviparous quadrupeds is much ſhorter, greatly more uniform in its diameter, and much leſs contorted, than in the viviparous claſs, and all their excrementious diſcharges, both liquid and ſolid, are voided through one common cloaca†. It is ſomewhat remarkable to find this reſemblance among them, both to the beaver, which lives ſo much in the water, and to birds, which fly about in the air.

The heart, in this claſs, is very ſmall, and has only one ventricle; whereas in man, in all the viviparous quadrupeds, and in birds, it contains two. The brain is likewiſe proportionally ſmaller than in viviparous quadrupeds. Their breathing, inſtead of conſiſting of uninterrupted and regularly alternate

* The obſervations I have made, on this ſubject, on the ſkeletons of oviparous quadrupeds in the Royal Cabinet, agree intirely with what has been communicated to me by letter from the celebrated anatomiſt Camper.

† Lizards, frogs, and toads, have no urinary bladder.

nate expirations and inſpirations, as in the two former claſſes, is frequently ſuſpended altogether for a conſiderable time, and is exerted at very irregular intervals*. Thus, when the different principles of the vital functions in theſe animals are examined, and compared with thoſe of the two former claſſes, a much greater ſimplicity is found to exiſt, both in the organs, and in the functions they produce†; there is leſs dependance between the different organs, the communication between them is leſs perfect, the motions are ſlower, and the frictions which take place are weaker. All theſe circumſtances contribute to render their vital machine more uniform in its operations, and

* See Mem. for Nat. Hiſt. of An. art. Land Tortoiſe of Coromandel.

† In ſeveral oviparous quadrupeds, according to the anatomical obſervations of Gerard Blaſius, ſome of the parts uſually belonging to the ſecretory organs are wanting, from which circumſtance theſe organs muſt neceſſarily perform their functions in a more ſimple manner than uſual. See farther on this ſubject, the articles Land Tortoiſe, Crocodile, Cameleon, Tokai, or Gecko, and Salamander, in the Mem. for a Nat. Hiſt. of An.

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leſs ſubject to be put out of order; or, in other words, it is more difficult to arreſt the vital functions in oviparous quadrupeds, as the vital principle is conſiderably more diffuſed, and cannot be deſtroyed but by being aſſailed in ſeveral parts at once.

The above particular organization, of oviparous quadrupeds, may be conſidered as partly the cauſe of their ſmall degree of ſenſibility; and the coldneſs, which is obſerved in their temperament, may perhaps be increaſed by the watery nature of their ſolids and fluids. They are fond of baſking in the full heat of the ſun, to ſupply their want of internal warmth; and, on the other hand, they delight in miry places, and eſpecially in warm and moiſt ſituations, on account of the analogy between theſe and the conſtitution of their own bodies. This humidity, far from being injurious, aſſiſts, eſpecially when aided by heat, to their development, and adds to their magnitude, by entering into their compoſition, and becoming part even of their immediate ſubſtance. It is evident that this watery fluid, with

which

which they are penetrated, is not a mere oedematous or morbid ſwelling, a cauſe of decay rather than of growth; ſince, inſtead of loſing any of their faculties, when thus penetrated by the abundance of moiſture in which they are plunged, their powers of reproduction ſeem increaſed, in proportion to the quantity of heat and moiſture which fills and animates their bodies.

This conſonance of their natures with moiſture, ſhows how much their vital motions hinge on ſeveral organizations, that are conſiderably independent of each other: This ſuperabundant quantity of moiſture ſeems advantageous, in ſuch beings as are ſuſceptible of having their internal functions ſuſpended, without being ſtopt altogether; as the ſoftneſs of their compoſition is capable of diminiſhing the communication of forces, without injury; and their various organs have more need of groſs particles, which remain ſtationary, than of active principles, and delicately conſtructed organs. In animals, on the contrary, which are fully endowed with the active principle of

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life, and whoſe exiſtence requires great rapidity in the internal motions, great elaſticity of the different parts, and a conſtant and ready communication of every kind of impreſſion, who have, in ſome degree, leſs need of being nouriſhed than of having their animation ſupported; in theſe, an over abundant moiſture uniformly produces injury. On this account, the more noble ſpecies of animals quickly degenerate on the ſhores of the new world, where immenſe foreſts ſtop and condenſe the vapours of the atmoſphere, and where infinite quantities of a lower vegetation retain, in the marſhy ſoil, that humidity which the winds are unable to diſperſe, and of which the ſun is only capable to raiſe a part, merely to increaſe the moiſture of the air, and to multiply and ſpread farther its baneful operation. This humidity, ſo noxious to the nobler animals, is highly beneficial to inſects; for it is on thoſe marſhy ſhores, ſcarcely abandoned by the ſea, and eternally immerſed in clouds of vapour and in thick fogs, that the

inſect

insect tribe acquires its greatest size, and is ornamented with the gayest colours. Preliminary Discourse.

Though the oviparous quadrupeds seem, in several respects, little favoured by nature, in comparison with the two former classes; they are yet greatly superior to several other extensive classes; and they require to be considered with so much the more attention, that their nature seems to hold a kind of middle rank, between the highest and lowest classes of living and organized beings. We are thereby enabled to discover the relations which subsist among a great number of important facts, that do not appear otherwise to have any analogy; but by thus, as it were, causing them to approach nearer each other, we are enabled to penetrate into their causes, and to see clearly the connection that nature has established among them.

The whole race of oviparous quadrupeds is not confined to inhabit the waters: Several of them frequent dry and elevated ground;

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ground; others are found in the chinks of rocks; and ſome live in the middle of foreſts, and climb nimbly even to the extremities of the higheſt branches of trees: But almoſt the whole of them ſwim in water, and dive with agility; from which circumſtance, in a great degree, ſeveral naturaliſts have included them all under the general name of amphibious animals. There is not, however, a ſingle individual of the whole claſs, but is obliged to riſe occaſionally to the ſurface, if they happen to be in water. Every animal that is provided with blood, is under the neceſſity of breathing the air of the atmoſphere; and, though fiſhes are able to remain a great while at the bottom, it is becauſe they are provided with a particular organ, which is capable of ſeparating the air, that is contained in the water, that it may reach their blood veſſels. The oviparous quadrupeds are forced to breath from time to time: The air, in that action, penetrates into their lungs, and reaches to their blood, which it revives and animates, though much ſeldomer

domer than in viviparous quadrupeds; it diminiſhes the too great thickneſs of the blood, and ſupports the force of their circulation. Theſe animals, however, may be drowned, by cauſing them to remain too long under water; though, in their hybernating ſtate, they ſeem capable of exiſting for a very long time without reſpiration, as, during that torpor, the blood does not require any great degree of fluidity to preſerve its languid motion.

Theſe animals, having a much ſmaller degree of ſenſibility, being leſs ſubject to the animation of active paſſions, experiencing leſs agitation from their internal motions, and acting outwardly in a leſſer degree, are on the whole much leſs ſubject to dangers, than the more perfect animals of the two former claſſes. They are both leſs expoſed to dangers, from having weaker appetites, and accidents are not near ſo apt to do them material injury. They can ſuffer the amputation of very conſiderable members, ſuch as their tail or legs, without

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risk of dying *. Some of them even recover these parts †, especially when there is sufficient atmospheric heat to assist the reproduction. What may seem still more astonishing, to those who only judge by such circumstances as they are continually accustomed to see, is that these animals will continue to live and move, for a long while after they have lost such parts, as are usually considered to be the most indispensably necessary to life. Thus tortoises are known to live for several days after their head has been

* See Pliny, l. ii. ch. 3. See likewise, in this work, the Water Lizard, or Ask.

In the Royal Cabinet, there is a specimen of the Dragon which wants a leg, that seems to have been lost by accident after the animal was nearly full grown, for the cicatrix is of considerable size: This specimen was sent by Mr de la Borde, King's Physician at Cayenne, and correspondent of the Cabinet. The same gentleman found a Lizard of a different species having only three legs; of this he has given a description in some very interesting observations on the natural history of South America, which he proposes to publish.

† See two Memoirs by M. Bonnet, in the Journal de Physique, for November 1777, and January 1779.

been cut off *; and frogs do not die immediately, even when the heart has been cut out: Even in the time of Ariſtotle, it was known that the heart of a ſalamander continued to beat for ſome moments after it had been laid bare by diſſection †. This extraordinary phenomenon diſtinctly proves, that the different parts of oviparous quadrupeds are but little dependent on each other. It is likewiſe evident, that their nervous ſyſtem is by no means ſo intimately connected in its various parts, as that of the more perfect animals; for we can ſeparate the brain and nerves of the head, from the ſpinal marrow and the nerves which ariſe from it, not only without producing inſtant death, but the animal does not at firſt ſeem very conſiderably injured in its functions. Beſides, it would appear that their blood veſſels do not communicate ſo intimately and extenſively with each

* See, in this work, the article Common Land Tortoiſe.

† Conrad Geſner, Hiſt. An. lib. ii. de Quad. Ovip.

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each other, as is the caſe in viviparous quadrupeds and birds; for, in that caſe, the whole blood would neceſſarily eſcape, where the great arteries have been cut, and the animal would die inſtantly. This agrees remarkably with the coldneſs and lentor of their blood, and explains why they ſhould not be expected to die immediately after the head is cut off, and in what manner they may continue to live ſeveral days after having loſt the means of being fed. They are able to remain a very long time without food; ſome inſtances have been known of tortoiſes and crocodiles living a whole year, though deprived of all ſuſtenance *.

Many of the animals of this claſs are covered with ſcales, or with bony or horny ſhells, which permit perſpiration only in a very ſmall number of points; added to which, their blood being of a cold temperament, it is leſs apt to tranſpire; and, in conſequence of both circumſtances, they have

* See farther on this ſubject, in the particular articles relating to theſe animals in this work.

have less occasion for nourishment to repair the loss. Being actuated by a much smaller degree of heat, they are not subjected to that extreme desiccation, which, in other animals, becomes a continual cause of thirst, or of necessity for a large supply of moisture, to make up for that which has been carried off. They have not, likewise, any necessity for frequent drinking, as a means of cooling their internal vessels, which, in consequence of the coldness of their fluids and languor of their circulation, are never overheated. It was observed, by Pliny, and other ancient naturalists, that such animals as do not perspire, and have little internal heat, eat little. The loss, or expence, of force, in moving machines, is always proportional to the resistance which the force meets with; the resistance is proportional to the friction, the friction is in proportion to the rapidity of motion, and the quickness of motion is in proportion to the internal heat.

Though we have thus seen, that oviparous quadrupeds easily resist the injuries which

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which only affect particular parts of their ſyſtem, they readily yield to the operation of external impreſſions that are conſtant, powerful, and general, in their hurtful tendency; becauſe their weaker ſyſtem is unable to oppoſe theſe by ſufficiently active counteracting powers. As the moſt diametrically oppoſite quality to their weak internal warmth, is evidently the action of an external cooling cauſe, proportional to its degree; we readily conceive that theſe animals ſhould not be able to endure the effects of a cold atmoſphere: For this reaſon, we ſeldom find ſea tortoiſes, crocodiles, and other larger ſpecies of oviparous quadrupeds, but in the torrid zone and other low latitudes in both continents, having a warm, or at leaſt a temperate atmoſphere; and, not only are theſe large ſpecies chiefly confined to the neighbourhood of the tropical regions, but in proportion to the diſtance which any of theſe ſpecies, or varieties of the ſame ſpecies, inhabit from the equator, in proportion as the places which they inhabit are in higher latitudes,

titudes, and in more humid situations, and consequently colder, their dimensions are sure to be so much the smaller*. The crocodiles of the warmer regions, exceed those of colder and more temperate climes, both in magnitude and number: If this general fact seems contradicted, by the crocodiles which inhabit near the line being sometimes smaller than those of higher latitudes, as in America, it must be observed that these smaller individuals are found in more thickly peopled districts, where they are subjected to a constant and destructive persecution, finding neither peace nor nourishment sufficient to enable them to acquire their full growth.

Considerable heat is so necessary to oviparous quadrupeds, that when, in the neighbourhood of the tropical regions, the changes of the seasons induce a degree of heat resembling that of the more temperate cli-

* The largest crocodiles inhabit the torrid zone, and there too their numbers are greater than in colder regions. See Catesby, Nat. Hist. of Carolina. Vol. II. p. 63.

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mates, in higher latitudes, we always find these animals lose their activity; their senses become blunted; their ordinary force is diminished; and the warmth of their blood is lessened. They then always seek to shelter themselves in various retreats; either in the holes of rocks, under the sand or mud of the waters which they usually frequent, or among the reeds and other vegetables at the sides of the great rivers. They there seem anxious to preserve the small remainder of warmth, which is about to desert their bodies, by seeking a less cold temperature than that of the air or water. They generally chuse these retreats in the middle of sequestered forests, or on the most inaccessible parts of the banks of rivers and lakes, on purpose to evade, as much as possible, the dangers they have to apprehend from their enemies, during their approaching torpor, when they are intirely without means of defence.

Even in these retreats, the cold, which is continually increasing, gains upon them, in spite of all their precautions: They fall into

into a kind of deep ſleep, or ſpecies of apparent death, which cannot be interrupted by the moſt violent noiſe, by any degree of agitation, nor even by wounds. In this abſolute inſenſibility, they ſpend the whole winter, preſerving only the appearance of an animal, and retaining no greater degree of internal motion, than is indiſpenſably neceſſary to prevent the putrefaction or decompoſition, which inevitably takes place in all organized bodies, when their functions of organization are completely ſtopt. In this ſtate, there only remains a few feeble ſymptoms of motion in the blood, which is often ſo very ſlow as not to excite or require any continuance of reſpiration. This circumſtance is aſcertained by our generally finding theſe animals, when in their torpid or hybernating ſtate, either ſunk in the mud or concealed in holes of the banks of rivers, in ſuch ſituations as to be completely covered over, by the additional water which has collected during the winter, and where, conſequently, it is impoſſible for them to breath, during a very conſiderable

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period: Notwithstanding of which, they uniformly recover life, whenever the returning warmth of spring reaches the places of their retreat, with sufficient power to restore the heat necessary for their languid functions.

These are not the only animals which become torpid, during the winter of countries under a moderate altitude of the pole: Serpents and crustaceous animals are subject to the same state of hybernation. Some of the more perfect animals, as the marmot, the dormouse, the bat, the hedgehog, &c. suffer likewise an annual torpor; but in these, the sleep, or suspension of sense and of the functions, is by no means so complete. Being endowed with much greater sensibility, than oviparous quadrupeds, serpents, and crustaceous animals, they retain a greater degree of internal life, during hybernation; their respiration, though much diminished in frequency and efficacy, does not cease altogether, and, therefore, serves to keep up some slight vigour in their internal functions.

When,

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When, even in winter, the temperature of the atmosphere is a very little increased, the hybernating oviparous quadrupeds recover, less or more, according to the degree of augmented warmth, from their torpor*; owing to which circumstance, some travellers, who had found crocodiles, and other oviparous quadrupeds, possessing almost their full ordinary vigour, during occasional mild weather in winter, have mistakenly asserted that they did not hybernate. They may, it is true, be sometimes preserved from falling into this annual hybernation, by means of particular food: A more than ordinarily substantial or heating nourishment, may increase the vigour of their solids, and augment the quantity and activity of their fluids, and may thereby produce and support a sufficiency of internal warmth, to compensate for the want of heat in the atmosphere. This apparent state of death, often continues, in some of the oviparous quadrupeds, for almost six

 months;

* See Observations on the Crocodile of Louisiana, by M. de la Coudreniere, in the Journal de Physique for the year 1782.

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months; notwithſtanding of which, their ſuſpended faculties recover full activity, when favourable circumſtances occur. We ſhall ſee hereafter, in the particular hiſtory of the aſk, or water newt, that it has been ſometimes found incloſed in pieces of ice, taken from the glaciers in the middle of ſummer; we are certain they muſt have been a good many months in that ſituation, and yet, when the ice has been melted, and the animals have again been reſtored to a proper temperature, they recovered their natural vigour.

As every circumſtance in nature is ſubject to certain bounds, theſe hybernating animals muſt neceſſarily periſh, if the cold to which they are ſubjected either continues too long, or becomes too ſevere; for the animal machine can only ſupport, during a certain limited time, the internal motions, which have been ſet agoing by means of external ſtimuli. It is neceſſary, both that freſh nouriſhment ſhould be furniſhed to ſupply the waſte of ſubſtance, and that the energy of the internal functions ſhould be

renewed

renewed by external impreſſions; that, by means of new ſenſations from without, all the ſprings of life and motion, may be again, as it were, wound up, or reſtored to their activity. Preliminary Diſcourſe.

The oviparous quadrupeds loſe hardly any ſenſible portion of their ſubſtance, during their long hybernation; of which the following relation of a courſe of obſervations furniſhes a very ſtriking illuſtration. 'On the ſeventh day of October 1651, the 'Chevalier George Ent weighed a land 'tortoiſe with great accuracy, juſt before 'its time of concealing itſelf below ground, 'and found it to weigh four pounds, three 'ounces, and three drams. On the eight 'of October 1652, having taken the ſame 'tortoiſe from the hole, in which it had 'concealed itſelf only the evening before, 'he found it to weigh four pounds, ſix 'ounces, and one dram: When it left its 'winter retreat, on the ſixteenth of March '1653, it weighed four pounds, four ounces. On the fourth of October 1653, 'after having been ſeveral days without

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'eating, it was taken from its hole; the 'eyes, which had been ſhut for ſome time 'before, were then open and conſiderably 'moiſt; its weight was four pounds, five 'ounces: When it left its hole, on the 'eighteenth of March 1654, it weighed 'four pounds, four ounces and two drams. 'Being juſt on the verge of hybernation, 'on the ſixth of October 1654, it weighed 'four pounds, nine ounces, and three 'drams; and, on the laſt day of February '1655, when it came out of the ground, 'it weighed four pounds, ſeven ounces, 'and ſix drams, having loſt one ounce and 'five drams during its torpid ſtate. Be-'fore retiring to its winter hole, it weigh-'ed, on the ſecond of October 1655, four 'pounds, nine ounces, having already been 'ſeveral days without taking any food; 'and, on the twenty fifth of March 1656, 'when it again came out, it weighed four 'pounds, ſeven ounces and a half. Im-'mediately before concealing itſelf, on the 'thirtieth of September 1656, its weight 'was four pounds, twelve ounces, and

'four

'four drams; and at its return to the light, on 'the fifth of March 1657, it weighed four 'pounds, eleven ounces, two drams, and 'a half. From these observations we perceive that this species, and all others which 'conceal themselves under ground to avoid 'the cold of winter, lose very little of their 'substance by transpiration, even during a 'complete abstinence from food of several 'months endurance *.'

The external parts of their bodies, being more exposed to the drying influence of the cold, and farther removed from the languid center of their internal motions, suffer a certain degree of injury, during hybernation, in most of the oviparous quadrupeds. When this external covering is not of bone, or at least very solid, as is the case in the crocodile and in tortoises, it shrivels, loses its organization, and can no longer remain united with the organized part underneath, as it no longer participates in the effects of the internal functions, nor in the general nourishment of the body. Wherefore, in the

* See the Collection Academique, tom. vii. p. 120.

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the ſpring, when the animal functions recover their energy, this exterior covering, whether it be naked ſkin, or covered with ſcales, no longer forms any part of the animated machine, but is become a real foreign ſubſtance, and is puſhed off, ſo to ſpeak, by the efforts of the internal motions, in which it no longer participates. In the mean time, however, the nouriſhment, which uſed to be applied for its ſupport, continues to be propelled as uſual to the ſurface; but, inſtead of repairing this old ſkin, which has now hardly any connection with the internal parts, by means of the circulation, it is expended in the formation of a new ſkin, which is produced immediately underneath the old. In conſequence of theſe operations, the old ſkin is gradually detached from all connection with the body, and all communication between it and the internal parts is completely cut off; thus, more and more deprived of every means of reſtoration, it ſubmits at laſt to the operation of ſuch external cauſes as tend to its decompoſition. Attacked, in this manner, on all ſides, it

gives

gives way intirely, tears open in many places, and falls off; and the animal completely covered by a new ſkin, comes out of this ſheath, now only ſerving as a troubleſome foreign body.

In this manner, it would appear, the annual change of ſkin in oviparous quadrupeds is produced, but this proceſs is not brought about only by means of hybernation; for, even in countries where a more equable temperature does not ſubject theſe animals to any winter, and where conſequently they do not experience any ſtate of torpor, they caſt their ſkins as regularly as in the caſe already deſcribed. Some of them, even change their ſkin more than once during the ſummer of temperate climates. In this caſe, a ſimilar effect is produced by the operation of contrary cauſes: The heat of the atmoſphere becomes equivalent, in its effects, to the cold of winter; it equally ſhrivels up the ſkin, impairs its texture, and deſtroys its organization.

The following obſervations on this ſubject, which form part of a work on the animal

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nimal economy in birds, not yet publiſhed, were communicated by the author, M. de Touchy of the Royal Society of Montpellier. 'On the fourth day of May 1785, 'he took a green lizard, marked with yel- 'low and bluiſh ſpots, about ten inches 'long, and put it living into a bottle, co- 'vered with a piece of open linen, which 'he placed on a marble table in a cool room 'on the ground floor. The lizard lived 'two months in this priſon, without taking 'any nouriſhment. For ſome days at firſt, 'it made ſeveral efforts to get out, but af- 'terwards it remained very quiet. About 'the forty-fifth day it appeared as if about 'to change its ſkin; the ſkin gradually be- 'came dry, ſhrivelled, and torn, and came 'off in withered and diſcoloured portions, 'while the new ſkin appeared of a fine 'freſh green colour, with beautiful well 'defined ſpots. The animal died on the 'ſixty-third day of its confinement, with- 'out having compleated its moulting; the 'old ſkin continuing attached to the head, 'the legs, and the tail. During the whole

'of

'of this period, it had not the ſmalleſt appearance of torpor; it walked round the bottle, ſometimes of its own accord, but eſpecially when the bottle was handled. Sometimes its eyes were ſhut for a while, but were ſoon opened again, and with every appearance of vivacity. It was forced to remain in a half rounded form, in conſequence of the too ſmall ſize of the bottle; and its poſture was rendered ſtill more inconvenient, by the bottom of the bottle projecting inwards. This lizard had certainly moulted before it was caught, for, beſides that all lizards and ſerpents regularly change their ſkin, immediately after the warmth of ſpring has enabled them to quit their winter habitations, the freſhneſs of its colours, and the delicate ſmoothneſs of its ſurface, ſufficiently indicated that this change had previouſly taken place.'

Several animals, of very different claſſes, loſe their ſkins, or ſuffer an analogous change, annually, or even more than once every year. This is particularly obſervable in

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in ſerpents, in birds, and in ſeveral animals that are cloathed with hair. Inſects, and even vegetables, are likewiſe liable to a ſpecies of moult. In whatever ſpecies of being this great revolution takes place, we are certainly intitled to refer the ſimilarity of effect to the operation of one general, or at leaſt ſimilar, cauſe. It muſt always be attributed to a failure in the equilibrium, which ought to ſubſiſt, between the moving force of the internal functions, and the counter operation of external cauſes: When theſe latter are ſuperior in efficacy, they injure the texture of the external coverings, which muſt therefore be thrown off; and, when the vital principle recovers its energy, it repairs and renews what had been injured. This equilibrium may be deſtroyed in an almoſt infinite variety of ways; and the effects which are produced in conſequence muſt likewiſe be greatly diverſified, according to the differences which ſubſiſt among the various organized beings on which they act.

In

In this property of moulting, as in all the other properties and forms, which are so liberally distributed to the various species of created beings, nature seems desirous of exhausting every possible degree of modification. And it often proceeds from the limitation of our knowledge, that our imagination discovers resemblances between forms and qualities, which ought not to be arranged together. Not only the greater productions of nature, must be carefully considered, but it is equally necessary to pay attention to the immense multitude of smaller beings, among which the observable diversification of exterior figure and of internal structure, and consequently of habits, was more easily imposed, than on larger bodies. When nature is studied on this plan, we may often discover natural beings, that seem only copies from the fanciful productions of a fertile imagination: Yet there always remains a wide difference between these originals and the most perfect copies. The imagination, in combining discordant forms and opposite qualities together,

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gether, is unable properly to prepare for this ſingular union; from being incapable to employ that gradation of ſhades, by which the moſt diſtant objects may be brought together, which point out the real creative powers, and are the marks with which nature ſtamps her durable works, to diſtinguiſh them from the tranſient productions of vain fancy.

For ſome time after the oviparous quadrupeds have changed their covering, the new ſkin is often ſo ſoft and delicate as to render them more ſenſible than uſual to the impreſſions of external objects: Hence they are more timid and reſerved in all their actions, and keep themſelves concealed as much as poſſible, until the new ſkin, become ſtrengthened by the application of nouriſhing fluids, and hardened by the influence of the air, is firm enough to reſiſt the ordinary injuries it has to endure.

For the moſt part, the manners of the animals of this claſs are gentle, and their characters are free from any degree of ferocity. Some of them indeed, as the crocodiles,

codiles, are conſiderably deſtructive, but theſe have large bodies to ſupport, and conſequently require a proportional quantity of food. We muſt, however, refer the reader to the particular articles of this work, for explanations on the degrees in which the general and common manners of the whole claſs are more or leſs diverſified in each ſpecies, in conſequence of the particular organization of each, and of the particular circumſtances in their modes of life. We ſhall there ſee, that ſome feed on fiſh; that others prefer ſuch animals as inhabit the land, ſuch as ſmall viviparous quadrupeds, and even birds, which they follow to the extreme branches of trees; ſome feed only on inſects, which buz about in the air; while others confine themſelves intirely to vegetables, and even ſome feed intirely on aromatic plants. Thus nature infinitely varies the means of ſubſiſtence in all the claſſes, and connects them all with each other by a vaſt number of relations. The almoſt endleſs chain of being, inſtead of being protracted only in one ſtraight direction,

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returns perpetually on itſelf, and is extended equally on all ſides; it is elevated, depreſſed, folded backwards and forwards, and, by its infinite twiſtings, contorſions, and connections, in which every part is interlaced and ſtrictly tied together, it forms a ſpecies of continuous ſolid, from which no part can be taken away, and in which no diviſion can be made, without deſtroying the unity of the whole fabric; in this immenſe and wonderful contexture, we can diſcover neither the firſt nor the laſt links, neither can we form any conjecture how nature has proceeded in its formation.

Although oviparous quadrupeds are often found together in great numbers, they cannot be conſidered as entering into any real ſociety; for, the herd has no concert, no common occupation, that employs their united efforts: They neither hunt, nor go to war, nor conſtruct any kind of work, in common. In chuſing a place of retreat, on the banks of the ſea or of lakes, in the crannies of rocks, or the hollows of trees, they uſe no art to render it a convenient

nient reſidence for a certain number of individuals, neither do they at all endeavour to fit it for their different neceſſities: It is merely an individual retreat, in which each endeavours to conceal itſelf, and in which no change or improvement is made; and it is choſen by each ſeparately, without conſidering whether it be capable of containing one or many. Preliminary Diſcourſe.

If ſome ſpecies have been found following their prey, either on land or in the water, at the ſame time, it muſt have proceeded merely from the accident of being attracted by the ſame object; if they attack together, it is only becauſe the ſame prey appears to each within its reach; if they ſeem to concur in a common defence, it proceeds from ſeveral being attacked at the ſame time; and if any individual ſeems at any time to have ſaved the herd from danger, by giving notice of ſome ambuſh, we muſt not ſuppoſe that, as in apes and ſome other more perfect animals, this individual had been entruſted with the care of watching for the common ſafety, but merely that

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the cry or noiſe which it made proceeded from the effect of fear, which is found almoſt in all animals, and is implanted in them by nature, to render them attentive to their own individual preſervation.

Though the oviparous ſeem endowed with leſs ſenſibility than the viviparous quadrupeds, they nevertheleſs annually experience at the return of ſpring the powerful influence of love; that paſſion, which, in the greater number of animals, gives ſtrength to the weak, activity to the indolent, and courage to the timid. Notwithſtanding the cuſtomary ſilence of many of theſe animals, they almoſt all have particular ſounds for expreſſing their deſires to each other: The male calls for the female by means of a ſignificant cry, to which ſhe replies in a ſimilar accent. With them, probably, love is only a ſlight impreſſion, a lambent flame, which is never felt with any degree of vivacity: The cold humours, which are ſo abundant in their conſtitutions, preſerve them, apparently, from that internal reproductive heat, which

which has been compared, with more truth than is commonly conceived, to a real fire, which is damped or tempered by every thing that is analogous with the cold element of water.

It would appear, however, that nature has provided a means, in moſt of theſe animals, to ſupply their defect of internal activity, by a convenient conformation of their ſeveral organs. In the male theſe lie always concealed within the body, until the moment of concourſe *: In this ſituation that internal heat, which continually penetrates the organs that are deſtined for continuing the ſpecies, muſt neceſſarily increaſe the force of their ſenſations. Beſides, the communication and reception of that flame, in moſt of theſe animals, is not momentary, as in moſt other animals; the

* In the lizards and tortoiſes, the ſexual organs are excerted from and introduced by the anus; and in the frogs and toads the ſeminal liquor, which is ſecreted by the male to fecundate the eggs of the female, iſſues from the ſame place. See theſe articles in the courſe of this work.

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union of the ſexes often continues for ſeveral days, during which they cannot be ſeparated, by any degree of terror, nor even by the moſt dangerous wounds *.

The fecundity of theſe animals is proportional to the length of their ſexual union. In viviparous quadrupeds, the ſmaller ſpecies have generally the moſt numerous litters; but this law does not extend to the oviparous quadrupeds, in which it is counteracted by the particular nature of their organization. It would even appear that, in them the larger ſpecies are ſometimes greatly more fruitful than the ſmaller, as may be ſeen in our account of the turtles, or ſea tortoiſes, and others.

Though the ſexual paſſion ſeems ſufficiently powerful in this claſs, they have no enjoyment of parental affection. They all abandon their eggs immediately after they are laid. Moſt of them, indeed, ſhow ſome choice of place for depoſiting them, and ſome of them even prepare that place for their reception, and arrange them there properly;

* See the particular hiſtory of the Green Turtle.

perly; digging holes to conceal them, and covering them over with ſand or leaves: But theſe trifling attentions are nothing, when compared with the vigilance with which many ſpecies of birds watch over the ſafety of their eggs, and the convenience of the young brood which is to proceed from them. It cannot be alledged, that the conformation of moſt of theſe animals unfits them to collect and arrange proper materials, for conſtructing a more commodious neſt, than thoſe holes which they dig for their eggs: The five long and ſeparated toes, which moſt of them are provided with, their four feet, their mouth, and their tail, are all certainly better calculated for this purpoſe than the bill and feet of birds. Preliminary Diſcourſe.

The ſize of the eggs of oviparous quadrupeds varies conſiderably more, according to the ſize of the ſpecies, than in the claſs of birds: Thoſe of the ſmalleſt ſpecies are ſcarcely the twenty-fourth part of an inch in diameter, while the eggs of the largeſt ſpecies are from two to three

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inches long. The embryos which theſe eggs contain, ſometimes unite together to form monſters, in the ſame manner as in birds. Seba gives a figure of a ſmall tortoiſe having two heads; and there is a ſpecimen, in the Royal Cabinet, of a very ſmall green lizard, with two very diſtinct heads and two tails, which was preſented by M. de la Rochefoucault, who joins indefatigable zeal to great knowledge in the ſciences.

The outer covering of the eggs is not the ſame in all the ſpecies of oviparous quadrupeds: In moſt of them, particularly in many of the tortoiſes, it is ſoft and flexible, reſembling wetted parchment; but in the crocodile, and ſome of the large lizards, it is compoſed of a hard chalky ſubſtance, exactly like the ſhell of birds eggs, but thinner, and conſequently more brittle.

Their eggs are not hatched by the female, but merely by the heat of the ſun and of the atmoſphere; and it is ſomewhat remarkable, that, while the animals themſelves

themſelves have need of a greater external heat than birds for their exiſtence, their eggs are hatched under a lower temperature than thoſe of birds. It would appear from this circumſtance, that, while the more complicated animal machine of birds requires a very active external heat to ſet it in motion, the friction of the different parts produces ſo great an internal heat, as to render that of the atmoſphere leſs neceſſary for preſerving the motion, after it is begun. Preliminary Diſcourſe.

Thus, the young of oviparous quadrupeds never know their mothers; they receive from their parents, neither nouriſhment, care, aſſiſtance, nor education; they neither ſee nor hear any action or ſound to imitate; ſhould want, at firſt, occaſion them to cry for aſſiſtance, their cries are in vain, and are never anſwered by maternal tenderneſs. There never, therefore, takes place in theſe animals, that commencement of mutual language, ſo well underſtood among many other animals, which originates from the wants of helpleſs infancy,

and

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and the kind ſollicitude of parental affection: Hence they are debarred from employing the greateſt of all means, for giving indications of their various ſenſations to each other, and of exerciſing a kind of ſenſibility, which might otherwiſe have been increaſed, by a greater communication of their mutual feelings and affections.

Though their ſenſibility is thus prevented from augmenting, their tempers are often ſuſceptible of being conſiderably modified by culture. Crocodiles, though the largeſt, ſtrongeſt, and moſt dangerous, of the claſs, have ſometimes been tamed. Among the ſmaller ſpecies, ſeveral ſeek their haunts near the habitations of mankind; ſome of them even enter houſes, where they find a greater abundance of thoſe inſects on which they feed than elſewhere: While ſome of them, as the ſmall ſpecies of tortoiſe, are ſought after, are placed in gardens, and carefully nouriſhed and protected; others, as the grey lizard, enjoy a more noble though leſs perfect degree of domeſticity with mankind, becauſe it is free

free and from their own choice, and because they receive from man neither food nor particular protection; and it is at the same more useful to us, as they destroy a great many noxious insects.

Most oviparous quadrupeds exhale a particular strong odour, which a good deal resembles that of musk, but is less agreeable: It is very much like that which proceeds from other animals, of different classes, such as serpents, pole-cats, weasels, &c. and from the lapwing, and other birds. This odour, which is stronger or weaker in particular species, proceeds from certain secretions, the organs of which are very apparent in some species, particularly in the crocodile, as shall be more distinctly pointed out, in the article appropriated to the natural history of that animal.

Most of the oviparous quadrupeds are long lived. We are certain that the large sea tortoises, and the other species, both land and fresh water, live to a very advanced age. This lengthened life, is not surprising in these animals, whose blood is

so

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ſo little heated, which ſcarcely ſuffer any loſs of ſubſtance by tranſpiration, which are capable of exiſting ſo long without food, which are liable to ſo few accidents, and which recover ſo readily from any loſs of ſubſtance they may ſuſtain. Theſe animals live much longer than the viviparous quadrupeds, if we meaſure their length of life merely by the time it continues; but, if its length is calculated by the time in which it is enjoyed, and in which they employ their powers and faculties, we ſhall find their life extremely ſhort in reality, though extended through a conſiderable time. This is peculiarly the caſe with thoſe ſpecies which inhabit at a conſiderable diſtance from the equator: Completely torpid during almoſt ſix months of every year, they really loſe half of their exiſtence, and we muſt therefore ſubſtract that half from the account, in the number of their years of life. Even from the reſt of their time, which nature ſeems to have allotted them with ſo bountiful a hand, we muſt ſtill abſtract a very conſiderable portion:

tion: During that lengthened ſickneſs, when, deſpoiled of their old ſkin, they are obliged to remain concealed and almoſt motionleſs in their retreat, until their new covering is ſufficiently firm to reſiſt the ſhocks of danger; during thoſe exceſſively long daily ſleeps, which they are more ſubject to than moſt other animals, becauſe they are leſs ſenſible of ſuch impreſſions as might rouſe them to action, and eſpecially becauſe they are much leſs excited by the ſharp cravings of hunger; when all theſe uſeleſs minutes, in which they can hardly be ſaid to live, are ſtruck out of the account of their days, there will only remain a very ſhort period of years, in which they are really ſenſitive and active, wherein they employ their powers of life, in which their animal machine is moved with force, and in which it tends with any degree of quickneſs towards decay. During the whole period of their torpid ſtate, cold, motionleſs, almoſt inanimate, and intirely unſuſceptible of every kind of impreſſion, they are in a manner reduced to the ſtate

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of dead unorganized matter, the endurance of which without decay is always long; becauſe, to ſuch ſubſtance, the continuance of time is only a ſucceſſion of paſſive ſtates of exiſtence, and of inert ſituations, void of productive effects, and conſequently, without the operation of any internal cauſes of deſtruction: Hence their endurance, in theſe moments, cannot be meaſured by the continuance of thoſe active enjoyments, whoſe fruitful effects, while they mature all the principles of vital motion, tend at the ſame time to wear them out, and to precipitate their deſtruction.

Several travellers report, that ſome of the lizards, and ſome of the oviparous quadrupeds without tails, are furniſhed with a poiſonous quality, ſtronger in ſome and weaker in others. We ſhall ſee, however, in the courſe of the particular articles of this work, that only a very ſmall number can in any degree be conſidered as venemous. It is thoroughly eſtabliſhed, that not a ſingle individual in the two former claſſes, the viviparous quadrupeds and birds,

have

have any venemous quality; and it is only among ſerpents, fiſhes, worms, inſects, and vegetables, that ſeveral ſpecies are to be found poſſeſſing a poiſonous power. From thence it would appear, that the abundance of venemous juices, in living bodies, is ſo much the greater, as their humours are colder, and their internal organization more ſimple.

Having thus taken a general view of the claſs of oviparous quadrupeds, we ſhall next examine more particularly, the common properties and general attributes of the large diviſions, in which nature ſeems to have arranged them. We ſhall firſt conſider the tortoiſes, of the ſea, of the freſh waters, and of the land; after them, the crocodiles, and the various kinds of lizards, the ſmaller ſpecies of which, particularly the ſalamanders, have ſo much reſemblance to frogs and other oviparous quadrupeds without tails; and we ſhall conclude our account of the claſs, by the natural hiſtory of theſe laſt. In this progreſs, we ſhall only extend our inquiries to any length, on theſe ſpecies

which

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which deserve considerable attention, by the singularity of their structure and form, by the greatness of their size or of their strength, or by the superiority of their properties. In our attempts to paint nature, we must endeavour to imitate her; and, as these distinguished species seem to have been in a great measure the objects of her predilection, they ought likewise to attract more of our notice, as furnishing us with greater instruction, and as throwing more light on the lesser objects which surround them.

In this our progress, when it becomes necessary to ascertain the limits, which separate the various species from each other, should any ambiguity exist respecting the obvious characters, we shall prefer considering the disputed individuals as forming only one species, rather than unadvisedly to establish two; being thoroughly convinced, that, though individuals are of easy production, nature has never uselessly multiplied species. Her effects are undoubtedly infinitely numerous, but the causes which she brings into action are few and limited;

limited: We ſhould, therefore, miſrepreſent the auguſt ſimplicity of her plan, and the unity of her powers, by recording unreaſonably a vain and falſe multiplicity of ſpecies. On the contrary, we conſider it as more conſiſtent with the wiſdom and power of nature to believe, that thoſe multiplied differences, which conſtitute the magnificence of the univerſe, and thoſe infinite varieties, which form its embelliſhments, are moſt frequently produced merely by the modification, in a thouſand different manners, of a few diſtinct ſpecies. Inſtead of enriching ſcience, we rather ſink and impoveriſh it, by overcharging its records, with an uſeleſs load of arbitrary ſpecies: For, we ought never to forget, that, from the ſublime throne, where nature reigns over the immenſity of time and ſpace, ſhe only employs a very limited number of powers, for giving animation to matter, for unfolding the whole ſyſtem of beings, and for giving motion to all the bodies in this vaſt and endleſs univerſe.

OF TORTOISES* IN GENERAL.

Tortoises in general.

TO almoſt all the animals, nature has been more or leſs bountiful, in the diſtribution of her favours: Some are endowed with beauty, others with ſtrength; ſome with great ſize, others with the poſſeſſion of murderous weapons; and ſome are provided with faculties fitting them for independence, being either formed for ſwimming in water, or for flying through the air. Being liable, when they firſt come into exiſtence, to ſuffer from the injurious effects of the atmoſphere, in conſequence of their frailty, ſome are obliged, for guarding againſt theſe, to dig with pain and difficulty deep ſubterraneous retreats; others hide themſelves in dark caves of the mountains, or in the cloſe receſſes of thick foreſts;

* The ſpecies which inhabit the ſea, are uſually, in Engliſh, diſtinguiſhed by the name of *Turtles*; but, as the whole genus ought to have an uniform denomination, the generic name Tortoiſe is here preferred.—T.

eſts; ſome of the ſmaller ſpecies, are obliged to lie concealed in the hollows of trees or of rocks, or even to ſeek for refuge in the habitations of their moſt cruel enemies, where even their minute ſize and all their cunning are unable to guard them, for any length of time, againſt diſcovery and deſtruction; others, ſtill more miſerable, either from weakneſs of ſtructure or of inſtinct, are reduced to the neceſſity of ſpending their melancholy exiſtence on the bare ground, unprotected from the utmoſt ſeverity of cold, or from the moſt violent tempeſts, except under the accidental ſhelter of ſome fallen branch or projecting ſhelf of rock. Even thoſe which enjoy the moſt comfortable and ſecureſt habitations, are forced to pay dear for the peace and ſecurity theſe afford, by the labour and pains which are neceſſary in their conſtruction. The tortoiſes alone, have received, even from their birth, the advantage of a kind of durable houſe; an aſylum, which is at the ſame time capable of reſiſting very powerfully againſt injuries, and is not fix-

Tortoiſes in general.

Tortoiſes in general.

ed to one ſpot. When food becomes ſcarce in one place, they are not forced, like ſome other animals, to deſert a habitation, which has been conſtructed with great labour, and, on going to ſome diſtant reſidence, to repeat all their former fatigues, perhaps conſiderably increaſed by more unfavourable circumſtances. They carry every where along with them, the dwelling which nature gave them; and they may be truly ſaid to drag their houſe about with them, under which they dwell in perfect ſecurity, as its ſtrength is ſufficient to reſiſt againſt all the efforts of their enemies.

Moſt of the ſpecies of tortoiſe, are able to withdraw, at pleaſure, their head, feet, and tail, under the ſhelter of that hard and bony covering, which defends them both above and below, and the openings of which are ſo narrow, as hardly to admit the tallons of rapacious birds, or the teeth of beaſts of prey. While they remain motionleſs in this defenſive poſture, they may, in general, receive, without fear and without danger, the attacks of ſuch animals as

endeavour

endeavour to prey upon them. In this situation, they are not to be considered as sentient beings, opposing force to force, which always suffer less or more by resistance, and can only acquire victory by means of danger, and accompanied with wounds; they only oppose an insensible covering to the attacks of their enemies, whose greatest efforts are spent as if against a stone, and they are equally safe, under cover of this natural armour, as if they were placed in the deepest and most inaccessible caves of a hard rock. Tortoises in general.

This impenetrable armour, by which they are guarded, is composed of two plates of bone, which are more or less rounded in their form, and more or less convex, in the different species; one of these covers the whole upper part of the body, and the other equally conceals and protects the under parts. The ribs and back bone are comprehended in the upper covering, which may be called the *buckler* *; and the lower

 one,

* In the original, this part is called the carapace, which might have been properly enough translated *calipash*;

Tortoiſes in general.

one, which is named the *breaſtplate*, contains the breaſt bones or the ſternum. Theſe two coverings are only attached together at the ſides of their circumference, and two openings are left between them, one before and the other behind; the former allows the head and the two fore legs to paſs through; and the latter admits the paſſage of the two hind legs, the tail, and the hinder part of the body, where the anus is ſituated.

When the tortoiſes incline either to walk, or to ſwim, they are obliged to extend the head, neck, and feet, from under the armour: Theſe parts, with the tail, and the fore and hinder parts of the body, are covered by a ſkin, which is fixed within to the edges of the buckler and breaſtplate; this ſkin is flexible, to admit of all the neceſſary motions, is gathered into folds and wrinkles, when the head and feet are retired, and is covered with ſmall ſcales, like thoſe

caliphſh; but as that term is appropriated in Engliſh to the language of cookery, the word buckler is here preferred.—T.

thoſe of lizards, ſerpents, and fiſh, giving a certain degree of reſemblance to theſe animals. Tortoiſes in general.

In almoſt all the ſpecies, the head is ſomewhat rounded towards the muzzle, at the extremity of which the noſtrils are ſituated, and having at its under part the mouth, which extends backwards beyond the ears. When the mouth is ſhut, the upper jaw covers and overhangs the lower; theſe are not, in general, furniſhed with teeth, but the naked bone, of which they are compoſed, is indented, and of ſufficient hardneſs to break very compact bodies with eaſe. The ſituation and ſtructure of the mouth, allows them readily to brouze on ſea weed and other vegetables, on which they feed. In moſt of the ſpecies, the ſituation of the ears is only indicated by particular plates or ſcales, under which they are concealed. The eyes are moſtly large and prominent.

The breaſtplate is almoſt always ſhorter than the buckler, which latter extends over the former, both before and behind, but

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particularly at the hinder part: The breaſtplate is likewiſe not ſo ſtrong as the buckler, and is often almoſt entirely flat. Theſe two pieces of the armour, are compoſed of ſeveral bones, the edges of which are indented, and laced into each other, in a greater or leſſer degree, and, in ſome ſpecies, the pieces which compoſe the breaſtplate allow of ſome motion. Both the buckler and breaſtplate are covered over with plates or ſcales, of a horny ſubſtance, called tortoiſe-ſhell; and theſe differ in ſize, form, and number, both in the ſeveral ſpecies, and even in different individuals of the ſame ſpecies. Sometimes the figure and number of theſe plates, correſpond to thoſe of the portions of bone over which they are ſituated.

The plates which cover the rim or circumference of the buckler, are diſtinguiſhed from thoſe which cover the middle or diſk. The middle is commonly provided with thirteen or fifteen diſtinct plates, arranged in three longitudinal rows, the middle row having uſually five, and each of the ſide

rows

rows four plates. The rim or border, is uſually furniſhed with twenty-two or twenty-five plates. The number of plates which cover the breaſtplate, varies in ſome ſpecies from twelve to fourteen, and in others from twenty-two to twenty-four. Theſe plates ſometimes fall off, in conſequence of being too much dried, or from ſome other cauſe: They are ſemi-tranſparent, flexible, and elaſtic; and, in ſome ſpecies, as the hawkſbill, &c; they are very beautifully coloured, and are ſought after as articles of luxury: They are ſo much the more fitted for being uſed in the arts, that they admit of being ſoftened, and even melted in ſome degree, by a gentle heat, ſo as to be united together, or moulded into a variety of forms. Tortoiſes in general.

Tortoiſes are ſtill farther diſtinguiſhed, from other oviparous quadrupeds, by ſeveral remarkable internal characters, and particularly by the conſiderable ſize of their urinary bladder, which is intirely wanting in lizards, and in oviparous quadrupeds without tails. They differ likewiſe from the other animals of this claſs, in the number of vertebrae of

the

Tortoiſes in general.

the neck: In the green tortoiſe, the common land tortoiſe, and the ſpotted tortoiſe, we have obſerved eight, while crocodiles have only ſeven; moſt of the other ſpecies of the lizard tribe have never more than four, and the animals of this claſs which want tails have none at all.

Theſe are the principal circumſtances in the general ſtructure of tortoiſes. Of this genus we know twenty-four ſpecies, which differ from each other, in ſize, or by other very diſtinguiſhable characteriſtics. The buckler of the largeſt ſpecies is ſometimes from four even to five feet long, by three or four feet in width; and the body is ſometimes more than four feet in perpendicular thickneſs, meaſuring from the moſt elevated point on the back. The head, in theſe ſpecies, is ſeven or eight inches long, by ſix or ſeven inches broad; the neck and the tail are about the ſame length. The whole weight often exceeds eight hundred pounds, and the two ſhells generally weigh nearly half as much. In the ſmalleſt ſpecies, on the other hand, the whole length, from the

muzzle

muzzle to the tip of the tail, even when fully extended, only measures a few inches, and the weight sometimes hardly amounts to one pound. Tortoises in general.

Besides this remarkable difference in size, the various species differ very much from each other in their habitudes. Some live almost constantly in the sea, while the rest, on the contrary, are confined to fresh water, or to dry and elevated ground. We have thought it necessary to arrange the genus into two divisions, according to these remarkable differences of habitation. In the first, six of the largest species are placed, which prefer the sea water, to any other residence. These are readily distinguishable from all the rest, by having their feet much lengthened, with toes of very unequal length, which are joined together by a membrane, so as to resemble fins more than feet; these, especially the fore legs, are often two feet long, more than a third of the length of the buckler. In these species, the two parts of the armour are in contact with each other in a larger portion of their circumference,

than

Tortoiſes in general.

than in the reſt; the two openings are therefore conſiderably ſmaller, and thereby leave leſs room for the attacks of birds of prey, aligators, tigers, cougars, and other ravenous animals; but moſt of the ſea tortoiſes, only half conceal their head and feet under the buckler, not being able to withdraw them altogether, like the freſh water and land ſpecies. The plates covering their breaſt-plate, inſtead of being only diſpoſed in two rows, like thoſe of the other ſpecies, are in four rows, and are likewiſe conſiderably more numerous.

Theſe ſea tortoiſes, may be conſidered as analogous with the numerous tribe of amphibious viviparous quadrupeds; ſuch as the morſe, the ſea lion, the lamantin, and the ſeals; as theſe have likewiſe their toes united, and are furniſhed rather with fins than with feet. Like theſe, likewiſe, they belong more to the element of water than to the land, and they connect, like them, the order to which they belong, with that of fiſhes, to which they have ſome reſemblance, both in their habits and ſtructure.

The

Tortoiſes in general.

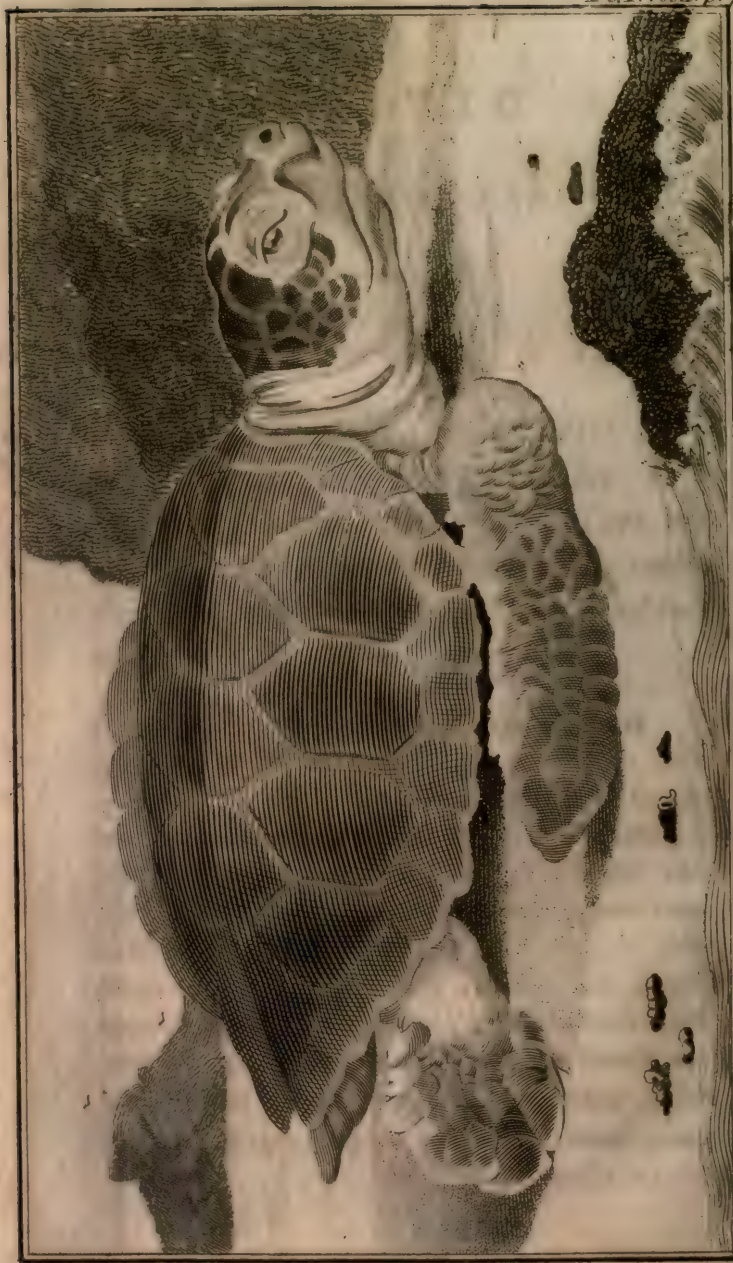
The other diviſion of the genus, is compoſed of ſuch tortoiſes as are found to inhabit, either the freſh water, or the woods and the dry land. Hence we comprehend in this diviſion, both the common land tortoiſe, which is found in almoſt all the warmer regions, and the mud tortoiſe, which is tolerably numerous in the ſouth of France, and in the other temperate countries of Europe. All theſe ſpecies, have thick and ſhort feet, and the toes are ſhort, and almoſt of equal lengths, being furniſhed with ſtrong hooked claws, and have no reſemblance whatever to fins. The buckler and breaſtplate are only united together, in a ſmall part of their circumference, and thereby leave conſiderable room for ready motion, to the different limbs and members; which facility of motion, is the more neceſſary, in theſe ſpecies, that they have more frequent occaſion for walking than ſwimming. In theſe ſpecies, likewiſe, the buckler is conſiderably more convex and prominent at its middle, by which means, when they happen to be turned over on the back, they

are

Tortoiſes in general.

are generally able to recover their prone poſture; while moſt of the ſea tortoiſes, whoſe bucklers are greatly flatter, wear themſelves out in fruitleſs efforts, to get back again to their natural poſition, when they are overturned.

I. DIVI-



Archer Sculp.

The Green Tortoise.

I. DIVISION.

SEA TORTOISES.

ART. I. *THE GREEN TORTOISE**.

Green Tortoise.

THIS large ſea tortoiſe, which is commonly called the green tortoiſe, is one of the beſt and moſt uſeful of the productions of nature. The great art of navigation, which carries mankind in ſearch of profit or

* Teſtudo mydas; having two claws on each foot before, and one on each behind; the buckler being egg-ſhaped. Syſt. nat. ed. Gmel. I. 1037. G. 119. ſp. 3. Teſtudo marina, Mus aquatilis, Teſtudo atra, T. mariha vulgaris, T. viridis. Muſ. ad. fr. 1. 50. Geſn. quad. ovip. 105. Aldrov. quad. 712. t. 714. Olear. muſ. 27. t. 17. f. 1. Bradl. nat. 1. 4. f. 4. Ray, ſynop. 254. Schmid. hiſt. teſtud.—Tortue franche, Rochefort. Du Tertre. Labat.—Tortue Mydas. Daubenton, Encycl. method. Jurucua, or Jurucúja, of the Braſilians, and Tartaruga, of the Portugeſe. Marcgr. braſ. 241.—Green Turtle. Brown, jam. 465. Sloane, jam. ii. 331. Cateſb. carol. ii. 38.

Green Tortoiſe.

or amuſement, to diſtant coaſts, would be of greatly more difficult execution, were it not that this ſpecies furniſhes navigators with an abundant and agreeable article of food, and at the ſame time an approved remedy againſt the diſeaſes, which proceed from long continuance in a crowded ſhip, amid the noxious effluvia of ſubſtances almoſt in a ſtate of putrefaction, through the combined influence of heat and moiſture *. And this excellent nouriſhment, is ſo much the more valuable to navigators, that the ſpecies is particularly numerous in thoſe warm latitudes, where the violence of the heat accelerates corruption, and the diſeaſes which it produces.

This ſpecies is found in great numbers, on the coaſts of all the iſlands and continents of the torrid zone, both in the old and new worlds. The ſhoals which furround

* The fleſh of the green tortoiſe, contains a ſoftening, inciſive, diaphoretic, and highly nouriſhing juice, the good effects of which I have often experienced. It makes an excellent ſoup, which is conſidered as a ſovereign remedy in cachexies, ſcurvy, and pulmonary diſorders.—This note was communicated by Mr de la Borde, Kings phyſician at Cayenne.

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ſurround theſe iſlands, and border the whole coaſts of theſe continents, produce vaſt quantities of algae and other marine plants*, which, though covered by the water, are near enough to the ſurface to be readily ſeen by the naked eye, during calm weather. Amid theſe ſubmarine paſtures, called *ſargaſſes* † by the Spaniards, which appear in many places on the ſurface of the ſea, but of which the greateſt part are under water and near the coaſts, a number of marine animals are found, and among theſe prodigious multitudes of tortoiſes. In theſe meadows, as they may be called, the green tortoiſe is often ſeen, in vaſt numbers, feeding quietly on the plants which they produce.

This ſpecies ſometimes meaſures ſix or ſeven feet in length, from the tip of the noſe to the extremity of the tail, by three or four feet broad, and almoſt four feet in

 thickneſs

* Cateſb. Carol. ii. 38.

† Deſcrip. Hiſpaniola, of in the Hiſt. gen. des voyages. Part iii. book 5.

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thickneſs at the middle of the body. When of this ſize, they ſometimes weigh eight hundred pounds. They are found in ſuch multitudes, that one is almoſt led to believe, they have been gathered here into theſe immenſe flocks, expreſsly for the purpoſe of refreſhing and nouriſhing ſuch ſeamen as might navigate in the neighbourhood of theſe fertile ſhoals. And theſe ſub-marine herds, may ſo far be conſidered as not inferior in uſefulneſs, to the cattle which feed on the graſs of the dry land, that, while they furniſh a ſucculent, ſubſtantial, and exquiſite food, they at the ſame time provide a very ſalutary and active remedy againſt many diſeaſes.

The green tortoiſe, is eaſily diſtinguiſhed from the other ſpecies of this diviſion, by the form of its buckler. This upper covering, which is ſometimes four or five feet long, by three or four feet in width, is of an oval form. The rim or border is compoſed of ſeveral plates, of which the largeſt are fartheſt from the head; at the edge they terminate in a crooked line, giving

giving the ſides of the animal a waved form. The middle of the buckler is uſually covered by fifteen plates, in three rows, of a reddiſh brown, darker or lighter according to circumſtances. The plates, both of the rim and on the middle, ſometimes fall off, either from the effect of dryneſs, or ſome other accident. Their form and number vary according to the age, and perhaps likewiſe the ſex, of the individual, as we have repeatedly found by examining individuals of different ſizes *. When the animal is under water, the buckler appears of a bright brown colour, with yellow blotches †, and the dark reddiſh brown is

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 produced

* The Chevalier de Widerſpach, an officer in the Regiment of Guiana, and correſpondent of the Royal Cabinet, writes, that the number of theſe plates varies in different individuals, but he ſuſpects they follow a rule of proportion to the age of the animal.

† This information is contained in ſome M. S. Memoirs on Tortoiſes, reduced into order by M. de Fougeroux de Bondaroy, of the Academy of Sciences, which that learned naturaliſt has kindly communicated to us.

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produced by drying. The breaſtplate is ſofter and ſhorter than the buckler, and is commonly covered by twenty-three or twenty-four plates, in four rows. On account of the two ſhields with which the tortoiſe is armed, this ſpecies has been called the *ſoldier* * in ſome countries.

In the Royal Cabinet, a young green tortoiſe, which has by no means acquired its full growth, is of the following dimenſions † :

	Feet.	Inches.	Lines.
Total length, from the point of the noſe to the hinder extremity of the buckler	3	0	0
Length of the head -	0	7	8
Breadth of the head -	0	3	9
Length of the buckler -	1	11	6
Breadth of ditto - -	1	10	7
Length of each fore leg and foot - - -	1	2	3

Length

* Conrad Geſner, de Quad. Ovip. 105.

† The meaſures in this book are all French, and are taken by following the curvature or convexity of the buckler.

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	Feet.	Inches.	Lines.
Length of each hind leg and foot - - - -	0	11	0

The feet of this ſpecies are very long, and the toes are united together by a membrane, in ſuch a way as to reſemble fins, rather than feet; and, in reality, they are both much better adapted, and much oftener uſed, for ſwimming than walking. From this conformation, the animal is analogous, in ſome degree, with fiſhes, and with the phocine tribe of viviparous quadrupeds. But for this peculiar ſtructure, the ſea tortoiſes would be obliged to abandon the ſea, as the common form of the feet, of the freſh water and land ſpecies, would not oppoſe ſufficient reſiſtance to the water; they would then be forced to inhabit the land, and would be able to walk thereon with equal facility, as thoſe ſpecies which are found in the middle of the woods.

On the hind feet, the firſt or inner toe, which is the ſhorteſt, is the only one that is furniſhed with a ſharp and diſtinctly apparent claw. The ſecond toe has a ſmal-

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ler claw, which is more rounded, and not ſo evident; and the other three toes have only membranous flat nails, that are ſcarcely diſtinguiſhable. On the fore feet, the two inner toes have ſharp claws, and the three others are armed only with membranous nails. It is very probable, however, that the number and ſituation of theſe claws are variable *; but, at any rate, there is never more than one on each hind foot, and this circumſtance may be conſidered as a diſtinctive and characteriſtic mark of the ſpecies.

The head, feet, and tail, are covered with ſmall ſcales, ſimilar to thoſe which cover the bodies of lizards, ſerpents, and fiſhes; and, as in theſe other animals, the ſcales are ſomewhat larger on the head, than on the neck and tail. It is alledged by ſome writers, that, notwithſtanding the great ſize of the green tortoiſe, the brain is not larger than a bean †; which is a confirmation, of what has been already

* Linn. Syſt. Nat. Teſtudo Mydas.

† Mem. for Nat. Hiſt. of An. article Land Tortoiſe of Coromandel.

dy advanced, in the preliminary diſcourſe, reſpecting the very ſmall ſize in general of the brain, in oviparous quadrupeds. The mouth, which is placed on the underſide of the fore part of the head, opens largely, even to beyond the ears on both ſides; its jaws are not armed with teeth, but the bones, of which they are compoſed, are very hard and ſtrong, and are furniſhed with points or aſperities, that ſerve in ſome degree for the ſame purpoſe. With theſe powerful jaws, they brouze on the graſs, ſea-weed, and other plants, which grow on the ſhoals and ſand banks, and with theſe they are likewiſe able to cruſh the ſhell-fiſh, on which they ſometimes feed. Green Tortoiſe.

After having ſatisfied their appetites, with theſe marine plants, they often retire to the freſh water, at the mouth of the great rivers, where they float on the ſurface, holding their heads above water, apparently for the purpoſe of breathing the freſh air. But, as they are ſurrounded with many dangers, both from natural enemies, and from mankind, they are forced to uſe

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great precaution, in thus indulging themſelves with cool air, and with the refreſhing ſtreams of river water. The inſtant they perceive even the ſhadow of any object, from which they ſuſpect danger, they dive to the bottom, in ſearch of ſecurity.

As the land tortoiſe has, in all ages, been conſidered as the emblem of ſlowneſs, the ſea tortoiſe may, with equal juſtice, be adopted as an emblem of prudence and caution. This quality, which is, in all animals, the conſequence of dangers from which they have eſcaped, is not to be wondered at in theſe animals, as they are ſo much the more ſought after, becauſe the chaſe is both extremely uſeful, and attended with hardly any danger. At the ſame time, though ſome circumſtances in their natural hiſtory appear to indicate a conſiderable perfection of inſtinct, the greater number of facts only evince a ſet of paſſive properties, inſtead of qualities of any activity. As they find a conſtant abundance of food, on the coaſts which they frequent, and are contented with plants, and

even

even with little in proportion to their ſize, they have no occaſion to quarrel, with animals of their own kind, for that food which is in ſuch plenty to them all. Being able, like all the other ſpecies of the genus, and all the animals of the claſs, to live for ſeveral months, nay even for more than a year, entirely without food, they flock peaceably together; they do not appear, like many herding animals, to ſeek for each other, on purpoſe to aſſociate, but merely gather together, as if by accident, and remain in this ſtate without diſturbance: They do not gather into a murtherous pack, by the operation of a deſtructive inſtinct, on purpoſe to ſucceed more eaſily in conquering a ſtubborn prey; but, drawn together to the ſame ſpots, by the ſame neceſſities and ſimilarity of habits, they live peaceably in the ſame place, without forming any kind of ſociety. Defended by armour of very ſtrong bone, which is capable of ſuſtaining exceſſive loads without danger of breaking, ſo as to have nothing to fear, and at the ſame time having no means of offence, they neither

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ther dread the neighbourhood of their kind, nor can they do any injury to others.

Mildneſs of temper, and paſſive force, to reſiſt againſt injuries, ſeem thus the diſtinguiſhing features in the character of the green tortoiſe; and it was, perhaps, in alluſion to theſe qualities, that the Greeks adopted it as a companion to the goddeſs of Beauty; for we are told *, that Phidias placed one at the feet of his celebrated ſtatue of Venus. In the manners of this animal, there is nothing ſtriking, neither are the colours brilliant, which adorn its covering: But its habits are conſtant and regular, in a degree equal to the ſolidity and ſtrength of the armour which defends its body. Poſſeſſing infinitely more patience than activity, it is never affected by violent paſſions; having vaſtly more prudence than courage, it ſeldom attempts defence, when attacked, but employs all its ſtrength to fix itſelf to the ſpot, when, unable to break its armour, any one endeavours to carry it away along with that covering.

The

* See Pauſanias in eliacis.

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The conſtancy of its habits, is evident in its conduct during the ſeaſon of love. At that time, the male, not only ſeeks the female with great eagerneſs, but the intimacy of their union is ſaid to continue for almoſt nine days and nights *. This connection takes place, breaſtplate to breaſtplate, in the ſea; ſtrongly embracing by means of their fins, and united all the while in the act of pleaſure, they float on the water, the waves being unable either to ſeparate them by violence, or to cool the ardour of the flame by which they are penetrated. It is ſaid, that in this ſeaſon they loſe their uſual timidity, and ſeem furious with love: No danger is able to ſeparate them; and the male is reported to continue his embraces, after the female, purſued by the hunters, has been mortally wounded, and even after ſhe has loſt all the blood of her body. Dampier relates †, that he has taken the males, during the time of their union with the

* M. S. Mem. on Tortoiſes, by M. de Fougeroux, already quoted.

† Dampiers voy. 1. 118.

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the females; he adds, that the male is then eaſily killed, as he is by no means wild; that the female, on ſeeing a boat, makes efforts to eſcape, but that ſhe is always held faſt in the embraces of the male, by means of his fore fins, and that, when caught adherent, the beſt plan is to ſtab the female, and the male then falls a certain prey. Mr de la Borde, from whom this work is inriched by many very uſeful communications, ſuſpects that the peculiar form of the ſexual organ of the male, is the cauſe of this obſtinate union, even after they are purſued, caught, and wounded.

Notwithſtanding this violence of mutual attachment, it ceaſes entirely with the natural neceſſity from which it originates. They are entirely diveſted of that intelligence, which, in mankind, uniting a number of moral ſentiments, prolongs the charms of enjoyment, by the energy of active feelings, and perpetuates the higheſt emotions of pleaſure, by the delightful remembrance of mutual tenderneſs. Immediately after the ſeaſon of union, the male abandons his mate, whom he before ſought for with

ſuch

such eagerness, and seemed to cherish with so great ardour; she is permitted to go on shore alone, exposed unassisted to every kind of danger, to conceal in the sand the fruits of an union, that appeared, during its continuance, to have been of a less transitory nature. Green Tortoise.

It is probable that the season for this union varies in different countries, according to temperature, and according as they are on this or the other side of the equator. In most of the warm countries of North America, it takes place about the end of March or beginning of April; and, very soon after, the females begin to deposite, in the sand on the shores, the eggs, which have been thereby fecundated. She prefers fine gravel, and loose sand, which is not mixed with sleech, or with marine productions, where the heat of the sun may the more easily hatch them, and she abandons them altogether, immediately after they are laid. This last fact is contrary to the opinion of Aristotle and Pliny, but is placed beyond doubt, by the united authority of all the modern

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modern voyagers and obſervers of credit; Indeed theſe two ancient naturaliſts, though for the moſt part tolerably accurate, give ſcarcely any exact accounts relative to oviparous quadrupeds, very few of which ſeem to have come under their immediate obſervation.

It is not, however, in all probability owing to indifference for their young, that the female tortoiſe thus leaves her eggs totally unguarded in the ſand. In this, out of the reach of the higheſt floods, ſhe digs, by means of her fins, or fore paws, one or more holes, about a foot wide, and two feet deep, in which ſhe uſually depoſites more than a hundred eggs *. Theſe are round, two or three inches in diameter, and are covered by a membrane, which reſembles wet parchment †. Theſe eggs are compoſed of a white, which is ſaid not to be coagulable by any degree of heat, and of a yolk, which may be coagulated by heat like that of other eggs ‡. The female tortoiſe

* M. S. Mem. by M. de Fougeroux.

† Ray, Synopſ. anim.

‡ Nouv. voy. aux iſles de l'Amer. 1. 304.

toiſe is ſo completely occupied with the care of properly diſpoſing her eggs, that nothing can draw off her attention from that object, and, at that time, ſhe ſeems totally inſenſible to fear *. On purpoſe to conceal them, ſhe covers them with a layer of ſand, ſufficient to prevent them from being ſeen by any perſon or animal, that might endeavour to deſtroy or carry them off, but ſo thin as to permit the full influence of the ſuns heat, for warming and hatching them. She lays generally three times every year, at the diſtance of about fourteen days, in ſome countries †, and three weeks ‡ in others between each period. Labat informs us, that they are very fruitful, laying as far as two hundred and fifty eggs, and ſometimes more, each ſeaſon §. Either from conſciouſneſs of the dangers they might incur, from the purſuits of their enemies, if they were to come on ſhore during the day, or from inclination, to avoid the exceſſive heat

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* Cateſby, Carolin. ii. 38.

† Id. ibid.

‡ M. S. Mem. by M. de Fougeroux.

§ Afrique occident. ii.

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heat of the ſun, they almoſt always chuſe the night time for laying their eggs; and it probably aroſe from this circumſtance, that the antients miſtakenly imagined they ſat on their eggs, to hatch them, during the night*.

As a looſe ſand is neceſſary for their convenience, they chooſe in an eſpecial degree certain coaſts, which they find to be more commodious, and leſs frequented, conſequently ſafer, than others; and even make very long voyages, from their feeding places, on purpoſe to come at theſe preferred ſpots. Thoſe which lay their eggs on the ſhores of the Caymanas, a ſet of iſlands off the ſouthern coaſt of Cuba, have above a hundred leagues to come from their uſual haunts. Theſe iſlands afford the particular kind of ſhore which beſt anſwers their purpoſes, and are ſo much frequented on that account* by tortoiſes, as to have received, at their firſt diſcovery, the name of *Las Tortugas*, or the Tortoiſe iſlands,

* Pliny, lib. ix. chap. 12.

† Voy. de Chriſt. et Barthol. Columb. in Hiſt. gen. des voy. iii. lib. 5.

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iſlands, from the vaſt multitudes of tortoiſes with which their ſhores were covered. Thoſe which paſs a great part of the year on the coaſts of the Gallapagos iſlands, in the Pacific Ocean, come as far as from the weſtern coaſt of South America, a diſtance of more than two hundred leagues, to lay their eggs. Thoſe again, which depoſite their eggs on the ſhore of the iſland of Aſcenſion, muſt come a much longer journey, as the neareſt land is above three hundred leagues diſtant *.

The heat of the ſun hatches the eggs, in twenty or twenty five days after they are laid; and the young tortoiſes are then ſeen, coming from under the ſand, being two or three inches long, and rather leſs in breadth. The time neceſſary for hatching the eggs, muſt, however, vary according to the different temperatures of the countries. Froger ſays, that in St Vincent, one of the Cape Verd iſlands, the eggs are hatched in ſeventeen days, and that the young tortoiſes require eight days thereafter, before

* Dampiers voy. I.

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they venture to the water *. Their natural inſtinct, or, more properly, the conformity of their organization with that of their parents, leads them to the neighbouring water, as a place of ſecurity, and where they may find proper food. To this they crawl very ſlowly; but, being ſtill too weak and too light, to bear the force of the ſurge, they are often driven back on the beach, where numbers of ſea-fowls, crocodiles, and tigers, or cougars, wait on purpoſe to devour them †. Hence only a ſmall number, in proportion to the multitudes that are hatched, eſcape into their proper element. Mankind likewiſe deſtroys vaſt numbers before they are hatched, as the eggs are ſought after in the ſand, with great avidity, on account of their furniſhing an agreeable and wholeſome article of food.

On the coaſts of the iſlands about the gulph of Mexico, the time of laying is from the month of April to September: On the coaſt of Iſſini, in Africa, it is from the

* Relation of a voy. to the South Seas, 52.

† Id. Ibid.

the month of September to January *. In that country, the natives not only ſearch for the eggs, during the whole time of laying; they likewiſe catch numbers of the young tortoiſes, immediately after they are hatched. They ſecure theſe in a kind of incloſures, ſurrounded with ſtakes, ſo ſituated as to admit the ſea; and in theſe they are allowed to feed and grow, to be taken out when needed, as being a more ready and leſs dangerous mode of ſupply, than the common manner of catching the grown tortoiſes. This ſeaſon is likewiſe choſen for catching the large female tortoiſes, which are more readily caught, when on ſhore laying their eggs, than when at ſea; and the fleſh of theſe, eſpecially when full of eggs, is more eſteemed than that of the males †. Green Tortoiſe.

In ſpite of the darkneſs, which is choſen by the female tortoiſes, for concealment when employed in laying their eggs, they cannot effectually eſcape from the purſuit

* Voyage of Loyer, to Iſſini on the Gold Coaſt.

† Sloan, Jamaica.

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of their enemies: The fiſhers wait for them on the ſhore, at the beginning of the night, eſpecially when it is moonlight, and, either as they come from the ſea, or as they return after laying their eggs, they either diſpatch them with blows of a club *, or turn them quickly over on their backs, not giving them time either to defend themſelves, or to blind their aſſailants, by throwing up the ſand with their fins. When very large, it requires the efforts of ſeveral men to turn them over, and they muſt often employ the aſſiſtance of handſpikes or levers for that purpoſe †. The buckler of this ſpecies is ſo flat, as to render it impoſſible for the animal to recover the recumbent poſture, when it is once turned on its back.

Some authors, willing to render their account of the capture of the tortoiſes very affecting, have reported, that, when they are overturned, and no longer able to eſcape

* M. S. Mem. by M. de Fougeroux.

† Deſc. of the Cape de Verd Iſles, in Hiſt. gen. des voy. V.

eſcape or defend themſelves, and find all their efforts in vain, they ſhed torrents of tears, and cry piteouſly *. It is certain that ſeveral ſpecies, both of thoſe which inhabit the ſea and the land, emit a kind of whiſtle, or a very diſtinct ſigh, when actuated by the paſſion of love, or by fear: It is, therefore, poſſible that the ſpecies in queſtion may emit ſome kind of cry, when ſtruggling in vain to recover its natural poſture, and when terrified by the aſſaults of its deſtroyers; but theſe have certainly been much exaggerated, in the relations of voyagers. Green Tortoiſe.

A ſmall number of fiſhers may turn over forty or fifty tortoiſes full of eggs, in leſs than three hours. During the day, they are employed in ſecuring thoſe which they had caught in the preceding night. They cut them up, and ſalt the fleſh, the guts, and the eggs †. Sometimes they may extract above thirty pints of a yellow or greeniſh oil ‡ from one large individual; this

* Ray, Synopſ. an. 255.

† M. S. Mem. of M. de Fougeroux.

‡ Id.

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is employed for burning, or, when freſh, is uſed with different kinds of food. Sometimes they drag the tortoiſes they have caught, on their backs, to incloſures, which have been already mentioned, in which they are reſerved for occaſional uſe.

The tortoiſe fiſhers, from the Weſt Indies and the Bahamas, who catch theſe animals on the coaſts of Cuba and its adjoining iſlands, particularly the Caymanas, uſually complete their cargoes in ſix weeks or two months: They afterwards return, to their own iſlands, with the ſalted turtle, which is uſed for food, both by the whites and the negro ſlaves *. This ſalt turtle is in as great requeſt in the American colonies, as the ſalted cod of Newfoundland is in many parts of Europe; and the fiſhing is followed by all theſe coloniſts, particularly by the Britiſh, in ſmall veſſels, on various parts of the coaſt of Spaniſh America, and the neighbouring deſert iſlands.

The green tortoiſe is likewiſe often caught

* Hawkins, voy. to the South Seas, 29.

caught at ſea *, in calm weather, and in moon light nights. For this purpoſe two men go together in a ſmall boat, which is rowed by one of them, while the other is provided with a harpoon, ſimilar to that uſed for killing whales. Whenever they diſcover a large tortoiſe, by the froth which it occaſions on the water, in riſing to the ſurface, they haſten to the ſpot, as quickly as poſſible, to prevent it from eſcaping: The harpooner immediately throws his harpoon, with ſufficient force to penetrate through the buckler to the fleſh; the tortoiſe inſtantly dives, and the fiſher gives out a line, which is fixed to the harpoon, and, when the tortoiſe is ſpent with loſs of blood, it is hawled into the boat, or on ſhore. Green Tortoiſe.

Another method is employed, in ſome parts of the ſouth ſeas, for catching the tortoiſe: A bold diver throws himſelf into the water, at ſome diſtance from the place where the tortoiſes are obſerved floating aſleep on the ſurface, during the great heats in the day time; he dives under

* Cateſby, Carolina, ii. 39.

Green Tortoiſe.

water, ſwimming below the ſurface leaſt his noiſe ſhould awaken them, until cloſe to the one he means to ſeize; then, riſing juſt behind, he takes hold of the buckler near the tail, and, by holding down the hinder part in the water, he obliges the fore part of the animal, now awakened, to keep upright, and thus prevents it from diving, until his companions come with the boat to take him and his prey on board. Anſon, who gives this information, expreſſes his ſurpriſe, that, on the weſtern coaſts of ſouth America, particularly about Panama, where victuals are by no means always plentiful, the Spaniſh inhabitants ſhould entertain a prejudice againſt the fleſh of the tortoiſe, which they conſider as unwholeſome, and even as a kind of poiſon; he attributes the origin of this miſtaken notion, to the ſingular and ugly figure of the animal. The Indian and Negro ſlaves, which were on board the ſhips of his ſquadron, having been educated in all the prejudices of their maſters, were at firſt aſtoniſhed at the boldneſs of the Britiſh ſailors, whom they ſaw eating

eating freely of turtle, and expected to see them fall victims to its supposed hurtful effects; but soon observing, that instead of doing them harm, they evidently grew better from their former sickly state through its use, they followed the example, and congratulated themselves on the discovery, by which they would ever after have it in their power to fare better than their masters, at so little expence and trouble. Green Tortoise.

Tortoises are taken with a species of net, called by the natives a *fole*, on the coast of Guiana. This net is about fifteen or twenty feet broad, by forty or fifty feet in length: The thread, of which it is made, is a line and a half in diameter, and the meshes are about a foot square: To every second mesh, at one edge, instead of corks, two floats of six inches long each are fixed, which are made of a spinous plant, called *moucou-moucou* by the Indians: To the lower edge, four or five large stones, of forty or fifty pounds weight each, are hung, to make it sink, and to keep it properly extended: At the two upper corners, are

fixed

Green Tortoiſe.

fixed two large pieces of the *moucou-moucou*, to ſerve as boys, for diſcovering the ſituation of the net. Theſe nets are uſually placed very near the little iſlands, as the tortoiſes are known to feed on the *fuci*, or ſea weed, which grow on the rocks around them. The nets are frequently viſited; and, whenever they appear to ſink more at one part than another, they are inſtantly drawn. The tortoiſes, when once intangled, find it extremely difficult to get diſingaged, on account of the agitation of the waves, which is generally conſiderable near theſe little iſlands, and keeps the ends of the nets in continual motion, ſo as to ſtupify and embarraſs the tortoiſe, in all its attempts to eſcape. If the nets are neglected for any time, the tortoiſes that may be intangled in them are ſometimes drowned. Or, when found caught by the ſharks or ſword-fiſh, being incapable either of flight or defence, they are ſometimes devoured, and the net is torn *. The ſeaſon of this ſpecies

* Information of M. de la Borde.

ſpecies of fiſhing, is from January to May *. Green Tortoiſe.

They are ſometimes caught ſleeping on the ſurface of the water, by approaching them ſilently in a boat, and turning them ſuddenly, before they have time to awake and eſcape by diving: After being overturned they cannot dive, and are either taken into the boat, or dragged a-ſhore. Somewhat in this manner, they uſed to be caught by the ancients in the ſeas of India †. Pliny likewiſe reports, that, when aſleep floating on the ſurface, they may be heard ſnoring from a conſiderable diſtance. This ſnorting noiſe may proceed from the narrowneſs of their throat; the opening of the glottis eſpecially, both in the ſea and land ſpecies, being very narrow ‡, which may probably contribute to prevent them from ſwallowing too much water, when feeding at the bottom of the ſea.

When

* Hiſt. gen. des voy. LIV. 380.

† Plin. Hiſt. Nat. lib. IX. chap. 12.

‡ See Mem. for Nat. Hiſt. of An. article Land Tortoiſe of Coromandel.

Green Tortoiſe.

When tortoiſes remain for any conſiderable time at the ſurface of the water, expoſed to a very hot equatorial ſun, while the ſea is ſo calm as not to bathe the buckler with its little waves, this covering becomes dry, and conſequently lighter, ſo as to render it more difficult for them to dive under water, at the appearance of danger; for their natural ſpecific gravity is ſo near to that of water, as to render it at all times troubleſome for them to overcome that impediment*. They can, indeed, render themſelves more or leſs ſpecifically heavy, by taking a larger or ſmaller quantity of air into their lungs, and thereby augmenting or diminiſhing the volume of their bodies; in the ſame manner as fiſhes manage with their ſounds, or air bladders, for the purpoſe of ſinking or riſing to the ſurface. But the difference which tortoiſes are able to make in their weight, by driving the air from their lungs, cannot be very conſiderable; ſince it is unable to counterbalance the contrary effect, which is produced by the exſiccation

* Plin. Hiſt. Nat. IX. 12.

ſiccation of their upper covering; though even this laſt is never equal to a ſixteenth part of the whole weight of the animal, as is proved by the following experiment. After allowing the buckler of a ſmall green tortoiſe, which had been previouſly weighed when perfectly dry, to remain ſix weeks in a great veſſel full of water, it was found to have acquired $\frac{45}{2\,78}$ parts of additional weight, by imbibing the water: Hence, the deſiccation produced on the upper covering, when the tortoiſe floats on the ſurface of the ſea, by the influence of the warmeſt ſun, cannot diminiſh its weight above that proportion. The buckler of the largeſt green tortoiſe does not exceed two hundred and ſeventy eight pounds; and, according to the above experiment, the ſuns heat can only render it lighter by forty-five pounds, which is leſs than the ſixteenth part of eight hundred pounds, the greateſt known total weight of any of the ſpecies. Green Tortoiſe.

This deſiccation of the buckler, aſſiſts the fiſhers in catching the tortoiſes, by hindering them from diving readily. When they

are

Green Tortoiſe.

are very near the ſhore, to which it is deſigned to drag them, they fix themſelves with ſo much force, that the ſtrength of four men is ſometimes hardly ſufficient to tear them from the ground. As, from moſt of their toes having no claws, and from their not being detached from each other, they are unable to graſp any object, we muſt admit, from the foregoing fact, that they have vaſt ſtrength; and this is farther confirmed, by the immenſe power of their jaws, and by the eaſe with which they crawl under the load of as many men as are able to ſtand on their back*. It is even ſaid, that ſome tortoiſes are found in India, ſtrong enough and ſufficiently large to carry fourteen men †: Though this may be an exaggeration, yet we are certain they poſſeſs very great ſtrength, which is ſo much the more remarkable, that their manners are notwithſtanding extremely peaceful.

When, inſtead of ſalting the tortoiſes, it is intended to eat them freſh, in which ſtate their

* Linnæi, Syſt. Nat. Teſtudo Mydas.

† Ray, Synopſ. animal. 255.

their fleſh is vaſtly more wholeſome, and of much better taſte; the breaſtplate, head, feet, and tail, are removed, and the meat is dreſſed in the buckler, which ſerves as a diſh. The moſt eſteemed parts, are thoſe which adhere either to the buckler, or to the breaſtplate. The fleſh and eggs of tortoiſes, are particularly ſerviceable, as a remedy againſt the diſorders of ſeamen: It is even ſaid by ſome, that, eſpecially in the warmeſt countries, it is a powerful antidote, in all diſeaſes which require purifiers of the blood*. It is probably this ſpecies, which ſome of the native inhabitants of America conſider as ſacred, and a peculiar gift of providence, giving it a name which ſignifies *Gods-fiſh*, becauſe they believe that its fleſh produces marvellous effects, when they happen to receive poiſon. Green Tortoiſe.

The fleſh of this ſpecies is ſometimes of a green colour, on which account it has received the name of green tortoiſe, or turtle, from moſt voyagers: This name is likewiſe very commonly given to the next ſpecies, which

* Barrere, Fr. Equin.

Green Tortoiſe.

which is called green-ſcale tortoiſe in this work. This green colour of the fleſh is not conſtant, but ſeems dependent on the particular haunts of the individuals, and probably proceeds from ſome peculiarity in food: It is not always the ſame, even in all the individuals that are caught in the ſame place. On the coaſts of the ſmall iſlands to the ſouth of Cuba, and near the Spaniſh main, ſome individuals have green fleſh, others have it black, and ſome have yellow *.

In the collection of Seba, there were ſeveral concretions reſembling bezoars, of a grey colour, more or leſs mixed with yellow, and having their ſurfaces covered over with tubercles, part of which he had received from India, and part from America. They were ſent to him as ſubſtances of great value, and as having been taken out of large ſea tortoiſes. He was informed, that

* On account of theſe circumſtances, this ſpecies is named Tortue Franche, in the original French; but as the name Green Turtle is univerſal in Engliſh, it has been retained in this tranſlation.—T.

that the Indians eſteemed them as more precious even than the oriental bezoar, on account of their rarity, and that they were employed as a remedy in ſmall-pox; probably on account of the fancied reſemblance, between the tubercles on their ſurface, and the puſtules of that diſeaſe*. The medicinal virtue of theſe concretions, is certainly equally imaginary with that of the bezoars, whether oriental or occidental; but there is no reaſon to diſbelieve their having been formed within the bodies of large ſea tortoiſes, for we ſhall have occaſion to notice, in the courſe of this work, ſeveral ſimilar concretions, which have been inconteſtably formed in oviparous quadrupeds. Green Tortoiſe.

Though theſe bezoars are mere uſeleſs productions, this is not the caſe with many other ſubſtances which are procured from the animal. Their fleſh and eggs are not the only uſeful parts of them to mankind. The bucklers have been uſed, by ſome Indian nations, for roofing their cabins; and it is

 ſaid,

* Seba, Muſ. 2. 141.

Green Tortoiſe.

ſaid, that ſome inhabitants of Ethiopia, and of the coaſts of the Red Sea, anciently employed them as ſkiffs, for navigating cloſe to the ſhore *. In ancient times, and in the infancy of ſociety, before mankind had diſcovered the art of tempering ſteel to great hardneſs, theſe upper coverings of the large ſea tortoiſes, were uſed as ſhields; and, even in our own days, they are ſtill employed for the ſame purpoſe, by ſeveral of the half ſavage nations, both in the old and new worlds, near the equator.

The ſize of this ſpecies is extremely various, from two or three inches in length, to ſix or ſeven feet; and as this increaſe takes place in a hard, compact, covering of bone, it muſt neceſſarily be very ſlow; and, accordingly, we find that the green tortoiſe does not arrive at its full growth, till near twenty years of age. This circumſtance has been fully aſcertained, by obſervation on tortoiſes that had been kept and fed in the incloſures formerly mentioned. Were we to eſtimate their extent of

* Ælian, Diodorus Siculus, and Pliny.

of life, by comparison with that of viviparous quadrupeds, the probable duration, after the twenty years of growth, could be readily ascertained: But, for the following reasons, that rule of computation cannot be admitted in the present case. Tortoises live, for the most part, in the middle of an element having a much more equable temperature than the air: In this circumstance, they participate with the class of fishes, and ought therefore, like them, to enjoy a very considerable length of life. But, as all animals become old and die, soon after their bones have turned entirely solid; and, as the bones of tortoises are much harder than those of fish, and consequently are much nearer to the extreme point of ossification, we must not suppose that their lives should be equally long with those of fishes. They have, however, a sufficient degree of analogy with fishes, to expect that, like them, they should continue a very great number of years, after the twenty years of growth, perhaps even more than a century; and we are, therefore, not to be surprised

Green Tortoise.

Green Tortoiſe.

that obſervations are wanting, on a length of time ſo much beyond that of the obſervers.

Though we are not provided with facts of ſufficient preciſion, for aſcertaining the length of life in the green tortoiſe, there are obſervations which eſtabliſh, with certainty, that the freſh water ſpecies, named the mud tortoiſe, lives at leaſt eighty years; and this confirms what has been already ſaid regarding the age to which the ſea tortoiſe may be expected to attain. From this great length of life, the Japaneſe have been induced to adopt the tortoiſe as an emblem or hieroglyphic of happineſs; for which reaſon, they adorn the temples of their gods, and the palaces of their princes, with repreſentations of this animal *.

One female green tortoiſe is capable of giving exiſtence, every ſummer, to almoſt three hundred young ones; of which, in a very ſhort time, every one may likewiſe produce three hundred annually. The multitude, therefore, which may proceed from one

* Hiſt. Gen. des voy. XL. 381.

Green Tortoiſe.

one individual and its deſcendants, during the courſe of its life, ſuppoſing it to be a hundred years, is perfectly aſtoniſhing, and may fully ſuffice to ſtock a whole coaſt, where none exiſted before. We ſhould, therefore, expect to find the whole coaſts of the torrid zone covered with theſe animals, in immenſe multitudes, which, ſo far from being hurtful or troubleſome, ought certainly to be of vaſtly more benefit to mankind, than a great many other ſpecies of animals that are found upon them. But, vaſt numbers of their eggs are deſtroyed, or carried off, before they are hatched; even of thoſe young tortoiſes that get out of the eggs, hardly a thirtieth part are allowed, by their various enemies, to arrive at any ſize; and of thoſe which come to a tolerable magnitude, a very large proportion are devoured by mankind, and by many other enemies that purſue them, both on land and in the water. Yet, notwithſtanding all theſe dangers, they are found every where in conſiderable numbers, on all the warm coaſts of Aſia, Africa, and America, wherever the ſhores are low and ſandy.

Green Tortoise.

They are so numerous about the Cape de Verd islands, that several vessels are employed annually to catch and salt them, for the American colonies *. They are very numerous about Cape Blanco; and so large that one is sufficient to satisfy thirty hungry men, the buckler being often fifteen inches in circumference †. They were found in abundance on the coast of Timor, by Dampier, and by Cook on that of New Holland. Mr de la Borde informs us, that about three hundred are caught every year at Cayenne, in the months of April, May, and June, when they come on shore to deposite their eggs in the sand. They are found in North America, as far north as the Bahamas, and Cape Florida ‡. In all the countries of both worlds, and on both sides of the equator, as far as twenty-five or thirty degrees of latitude, the same green species is found; modified, indeed, by the differ-

ence

* Hist. Gen. des voy. V.—On this coast they are said to feed sometimes on ambergris. Voy. de Geo. Robert, in the year 1721.

† Voy. de Lemaire, aux Canaries.

‡ Catesby, Nat. Hist. of Carolina.

ence of temperature, and by the various kinds of food, whether conſiſting of marine vegetables or of ſhell-fiſh, which are met with in the different haunts. Green Tortoiſe.

This large and valuable ſpecies, which is to be conſidered as an inhabitant of the ſea rather than of the freſh water, is capable of going with great facility from one place to another. It can remain a very conſiderable time under water, and can more readily riſe to the ſurface than ſink below it; during its migrations, as it ſwims with great readineſs at the ſurface, it enjoys all the neceſſary refreſhment of the air, and as ſhoals, abounding in ſea weed and ſhell-fiſh, are every where to be met with, it is never at a loſs for food; beſides, it can exiſt without nouriſhment for ſeveral months. This facility of making long voyages through the ocean, is fully proved already, by the diſtances which it is obliged to travel, often more than a hundred leagues, for the purpoſe of depoſiting its eggs in convenient places. Tortoiſes, of a ſpecies very little different from the preſent, have been found

Green Tortoiſe.

at ſea, more than ſeven hundred leagues diſtance from any known land *. Cateſby informs us, that he ſaw a logger-head tortoiſe caught at ſea with a harpoon, in the thirtieth degree of north latitude, and nearly midway between the Azores and Bahamas †. And Mr de la Borde has ſeen many tortoiſes floating on the ſurface of the ſea, at more than three hundred leagues from land.

They have even been found aſleep on the ſurface of the ocean, in conſiderably high latitudes; and are not ſo excluſively confined to the torrid zones, but that a few are occaſionally diſcovered in the European ſeas. It is probable, even, that the green ſpecies may inhabit the Mediterranean, where it will, of courſe, prefer the more ſouthern ſhores: At leaſt, we know that the logger-head ſpecies, which does not differ very much from the green, is there found in conſiderable numbers ‡. Theſe neceſſarily

* Cook's third voyage.

† Carolina, ii. 40.

‡ See the article appropriated to the Logger-head.

Green Tortoiſe.

neceſſarily chuſe the low, ſandy, and almoſt deſert, coaſt which ſeparates Egypt from Barbary, on purpoſe to depoſite their eggs; as they there find, the quiet, the warmth, and the peculiar kind of ſhore, which are neceſſary for their purpoſe. Though ſome ſea tortoiſes are occaſionally caught on the coaſts of Languedoc and Provence, they have never been known to lay their eggs in either of theſe places *. They may even be thrown, by particular accidents, on ſtill more northern ſhores, without being deſtroyed by the inclemency of the climate: Sibbald † reports to have learnt from one worthy of credit, that ſea tortoiſes are ſometimes caught among the weſtern iſles of Scotland.

We may even conclude, that the green tortoiſe can not only live for ſome years, but may even arrive at its full growth, in theſe latitudes. M. Bomare has publiſhed, in his Dictionary of Natural Hiſtory, a letter

* On the information of M. de Touchy, of the Montpellier Society.

† Prodrom. Hiſt. Nat. Scot.

Green Tortoiſe.

letter which he received in 1771, from M. de Laborie, advocate in the ſupreme council of Cape François in St Domingo; by which it appears, that a tortoiſe, which was caught in 1754 on the coaſt of France, had been ſent, when very young, by his father, from St Domingo in 1742, and eſcaped from the veſſel which was loſt in a ſtorm. Tempeſts and other powerful cauſes, ſometimes oblige the enormous cetaceous fiſhes, which people the icy ſeas, to come into the temperate regions; ſo that theſe and the large green tortoiſes may have occaſionally met together in the ſame place; Large ſea tortoiſes have been caught near the mouth of the Loire, and great numbers of cachalots have often been caſt aſhore on the coaſts of Brittany. This is a ſingular ſpectacle, to ſee, in a manner at one time, gathered on the ſurface of our European ocean, the ſea tortoiſe, the natural inhabitant of ſeas, where the tropical ſun reigns perpetually with ſo much power, and the whale, which uſually frequent the regions of ice and of darkneſs, where the benign influence of the

orb

orb of day hardly ever ſheds a feeble ray, and where nature is almoſt perpetually involved in tempeſts and impenetrable gloom. Green Tortoiſe.

On this ſubject we may particularize the two following examples. In 1752, a tortoiſe, ſix feet long and four feet broad, weighing between eight and nine hundred pounds, was caught in the harbour of Dieppe, having been driven there by a ſtorm. Two years afterwards, a ſtill larger tortoiſe, eight feet long, and above eight hundred weight, was caught near Antioche, and carried to the abbey of Long-veau, near Vannes in Brittany.

The green tortoiſe can only be expected to acquire its full ſize, on almoſt deſert coaſts, where it is not liable to be taken; accordingly the largeſt hitherto known, have been found on the coaſts of America, in the ſouth ſeas, near the equator. Thus the ferocious animals are not excluſively prevented from multiplying, and acquiring their fulleſt ſize and vigour, by the neighbourhood of man. This king among the works of nature, frequently becomes a tyrant;

Green Tortoiſe.

rant; not ſatisfied with driving the noxious animals to the deſerts, his inſatiable avarice often turns againſt its own intereſt, and baniſhes to diſtant ſhores the gentleſt and moſt uſeful ſpecies; inſtead of carefully increaſing his advantages, he improvidently diminiſhes them, by uſeleſsly deſtroying, in individuals too ſoon deprived of life, the numerous poſterity which they would otherwiſe have produced.

It were certainly worth while, to endeavour to naturalize the green tortoiſe on all the temperate coaſts, where convenient ſandy ſhores, above the reach of the higheſt tides, could be found for depoſiting and hatching their eggs. The acquiſition of ſo fruitful a ſpecies would be moſt valuable to mankind; and this real wealth, which would preſerve and multiply of itſelf, would, at leaſt, not call forth the indignant regrets of humanity and philoſophy, like thoſe other baneful ſpecies of riches, which are brought from the equatorial regions, at the expence of ſo much human miſery and ſo many enormous crimes.

We

Green Tortoiſe.

We now turn our attention to the other ſpecies of tortoiſes, which inhabit the ocean along with the green tortoiſe, and which reſemble it ſo much, in form, qualities, and habitudes, that we ſhall only have to point out the particular differences which diſtinguiſh them from it, and from each other.

ART. II. *THE GREEN-SCALE TORTOISE* *.

Green-ſcale Tortoiſe.

THIS ſpecies, as well as the former, has been called the green tortoiſe, by moſt voyagers. In a great part of South America, it is called the Amazon tortoiſe, becauſe it frequents the ſhores of the great river of that name; which is ſo abundant in tortoiſes of ſeveral kinds, that, by means of them only and their eggs, the whole inhabitants on its banks might be ſufficiently ſupplied

* This ſpecies ſeems confounded with the former by naturaliſts, on account of moſt, if not all, voyagers giving the ſame name to both.

Green-scale Tortoise.

plied with food *. We have not, however, adopted that name, because it has likewise been given to a very different species, which never goes to sea. The trivial name adopted for the present species, is derived from the circumstance of its scales being considerably more on the green colour, that those of any other tortoises. These scales are very beautiful, transparent, and thin, and serve excellently for several manufactures. The head, in this species, is small and rounded. This green-scale tortoise, in most respects, has a strong resemblance to the green species in its form and manners; but it never acquires the same size, being generally about a quarter smaller †.

'This species is likewise found, in considerable numbers, near Cape Blanco, on the western coast of Mexico, in the South Seas, where it is the only known kind of sea tortoise. It is the largest species in the South Sea, weighing usually from two

* Hist. Gen. des voy. LIII. 438.

† On the information of the Chevalier de Widerspach.

'two hundred and eighty to three hun- Green-scale Tortoise.
'dred pounds. The fat is yellow, and the
'lean white, and its flesh is very excellent.
'About Bocca-toro, in Verragua, it is not
'so large as in the South Sea; the flesh
'likewise, of those caught in the latter
'place, is not so white, and the fat is less
'yellow. In the bays of Campeachy and
'Honduras, they are still smaller, having
'green fat, and the lean is blackish; one,
'however, caught by the captain of an
'English vessel, at Port-Royal, in the bay
'of Campeachy, was six feet wide, and
'four feet thick from back to belly, and
'produced eight gallons of oil *.

It would likewise appear, that this species inhabits the coasts of the gulph of Mexico, and of all the hot countries in the New World, on both sides of the Line; but it has not been hitherto discovered in the Old World. The flesh is equally delicate, and as wholesome as that of the green tortoise, and is even preferred to that species

* Dampier's voyage, I. 113.

Green-scale Tortoise.

cies in some places. The eggs salted, and dried in the heat of the sun, are excellent.

M. Bomare is the only naturalist who has noticed this species, which we never saw, and which is here introduced entirely on the authority of voyagers, and of the Chevalier de Widerspach, who corresponds from Cayenne with the directors of the Cabinet.

ART. III. *THE LOGGER-HEAD TORTOISE**.

Logger-head Tortoise.

MOST naturalists have described this third species of sea tortoise, under the name of caret; but, as that name is appropriated, by voyagers, to another species, from

* Testudo caretta; having two sharp claws on each foot, both before and behind; the hinder plates of the buckler being protuberant. Syst. nat. ed. Gmel. I. 1038. G. 119. sp. 4.

T. cephalo. Schneider, Schildkr. 303. n. 2.—T. marina, caouana dicta. Ray, syn. quad. 257. Sloan, jam. ii. 331. Catesb. carol. ii. 39.—T. corticata, vel corticosa. Rondel. Pisc. 337.

Le

from which the moſt beautiful tortoiſe-ſhell is procured, we have here rejected it, preferring one that is in more general uſe *. This ſpecies is larger than the green tortoiſe; from which it is moſt remarkably diſtinguiſhed by the largeneſs of its head and mouth, and by the ſuperior length and force of its upper jaw †. The neck is thick, and is covered with a looſe wrinkled ſkin, which is garniſhed with horny ſcales, at ſome diſtance from each other ‡. The body is oval, and the buckler is wider in the middle, and narrower behind, than in the other ſpecies ‖. The plates which cover

Logger-head Tortoiſe.

Le caret. Encycl. method.—Tortue caouane. Rochef. antil. 248. Labat. 308.—Kaouane. Du Tertre. 228.—Canuaneros, and Juruca, in the Weſt Indies, according to Bomare.—Logger-head turtle. Brown, Jam. 465.

* In the original, this ſpecies is named the Caouane, in imitation of the natives of Cayenne in South America; the name of Logger-head is already familiar to the Engliſh reader, and is therefore adopted in this tranſlation.—T.

† Cateſby, Carol. ii. 40.

‡ Information from the Chevalier de Widerſpach.

‖ Brown, Jam. 465.

Logger-head Tortoiſe.

ver the border or rim of the buckler, are ſo diſpoſed as to form indentations, like the teeth of a ſaw *. The middle of the buckler has three rows of plates, of which thoſe in the middle row are very protuberant, and it ends in a point behind. The buckler is of a yellow colour, with black ſpots or blotches, when the animal is in the water †. The breaſtplate is uſually covered with twenty two or twenty four plates, and terminates backwards in a kind of rounded edge or border. The tail is ſhort. The legs are much lengthened, and reſemble fins, like thoſe of the green tortoiſe, already deſcribed, being likewiſe covered with thick ſcales; the fore legs are conſiderably longer, but narrower, than the hind legs: The toes are united together by membranes; and both the fore and hind feet have each two ſharp diſtinct claws, which may be conſidered as the characteriſtic mark of the ſpecies.

The logger-head, like the green tortoiſe, inhabits the warm parts of the New World, but

* Cateſby, loc. ſupra citat.

† M. S. Mem. of M. Fougeroux.

but ſeems to prefer a ſituation rather more northerly than that ſpecies, being leſs common on the coaſts of Jamaica *. It is likewiſe found in the Old World, being very common in the Mediterranean, where a great number are caught, eſpecially near Cagliari and Caſtel-ſardo, on the coaſt of Sardinia, in the forty-firſt degree of north latitude. Theſe often weigh four hundred Sardinian pounds †. Rondeletius, who was a native of Languedoc, informs us that he kept one of this ſpecies for a conſiderable time, which had been caught on the coaſt of Provence: It emitted a confuſed kind of noiſe, and frequently ſighed, as has formerly been mentioned of the green tortoiſe ‡. Logger-head Tortoiſe.

The plates or tortoiſe-ſhell of this ſpecies are hardly of any value, though much larger than thoſe of the hawks-bill which are moſt eſteemed, becauſe the logger-head is almoſt always covered by a kind of lepro-

 ſy,

* Brown, Jam. 465.

† Cetti, Hiſt. Nat. Amph. et Piſc. Sard. 13.

‡ Rondelet. Piſc. 338.

Logger-head Tortoiſe.

ſy, which ſpoils the ſhell; it was, however, much uſed formerly, for ornamenting mirrors, and other large pieces of furniture. Sometimes the buckler is covered over with ſea-graſs and ſhells, and the folds of the looſe ſkin are often found filled with ſmall cruſtaceous inſects *.

The logger-head has a fiercer appearance than the other ſea ſpecies; and, being both larger and ſtronger, it is likewiſe bolder than them. Having need of a more ſubſtantial diet, it is not contented with ſea-weed, but is even voracious, and attacks young crocodiles, which it often mutilates of their limbs or tail, with great eaſe †. We are informed, that it frequently lurks in the bottom of creeks, along the ſhore, into which the crocodiles ſometimes retire backwards, becauſe the length of their bodies prevents them from turning readily; and, taking advantage of this poſture, the logger-head ſeizes them by the tail, having then

* Brown, Jam. ubi ſupra citat.

† Memoir, by M. de la Coudreniere, in the Journal de Phyſique for Nov. 1782.

then nothing to fear from their formidable teeth *. Logger-head Tortoiſe.

As the food of this ſpecies is in a conſiderable proportion from the animal kingdom, and conſequently is more ſubject to putrefaction than that of the green tortoiſe, conſiſting very much of ſea worms, moluſcae, &c. its fleſh participates of the bad flavour of theſe ſubſtances, and is oily, rancid, fibrous, tough, and fiſhy †. The muſky flavour, which proceeds from moſt tortoiſes, is ſtill ſtronger and more diſagreeable in this ſpecies ‡, ſo as even to be almoſt intolerably fetid; on which account it is in very little requeſt, where better can be procured. It is, however, often eaten by ſeamen, who find it very heating ‖; and it is ſaid likewiſe to be ſalted for the uſe of the negro ſlaves, every means being anxiouſly

 employed,

* Communication from M. Moreau de Saint Mery, Procureur General in the ſupreme council of St Domingo.

† Brown, Jam. where already cited.

‡ Brown, Jam. 466.

‖ Nouv. voy. aux Iſles de l'Amer. i. 308.

Logger-head Tortoiſe.

employed, to collect food, both from the land and ſea, that theſe miſerable wretches may be enabled to work hard for their unfeeling maſters. This ſpecies affords a large quantity of oil, which ſmells too offenſively to be uſed as food; but it ſerves very well for burning, for dreſſing leather, and for the bottoms of ſhips, which laſt it is ſaid to preſerve from the attacks of worms, probably by its offenſive odour.

The logger-head is by no means ſo uſeful, as the green ſpecies, and is not, therefore, ſo much ſought after: Hence, having fewer enemies, it is more numerous, eſpecially in ſome ſeas. Being much ſtronger than the other ſpecies, it makes longer voyages, and is often found at more than eight hundred leagues diſtance from any land, as has been already mentioned. Beſides, as it feeds ſometimes on fiſh, it has leſs neceſſity for keeping on the coaſts than the other ſpecies. It is able eaſily to break the largeſt ſhells, to devour the animals they contain, and, according to the information of fiſhers in North America, very large

ſhells

ſhells of ſeveral kinds are often found, that have been broken by this ſpecies*. Logger-head Tortoiſe.

The chaſe of this ſpecies is ſometimes attended with danger, as it defends itſelf, both by means of its mouth and paws, when any one approaches, for the purpoſe of turning it over on its back; and it is extremely difficult to make it quit any hold, which it has taken with its jaws. This reſiſtance, which it oppoſes againſt ſuch as endeavour to ſeize it, has been attributed to a ſpirit of miſchief; it has been reproached for this juſt defence, and has been condemned for employing its natural arms, in protecting its own life. But it is ever thus with tyrants, who conſider every reſiſtance they meet with from the weak, againſt their gratifications, as ſo many crimes.

Cateſby gives the name of trunk tortoiſe † to a very large ſea ſpecies, which is rather ſcarce ‡. That ſpecies grows to a

* Cateſby, Carol. ii. 40.

† La tortue coffre.

‡ Teſtudo arcuata, or trunk tortoiſe. Cateſby, Carol. ii. 40.

Logger-head Tortoiſe.

vaſt ſize, is narrow, and very thick, and the buckler is conſiderably more convex than in the other ſea ſpecies. This is certainly the ſame ſpecies mentioned by Dampier *, and which he calls the large trunk tortoiſe, being the ſecond ſpecies which he enumerates. Both that mentioned by Dampier, and the one deſcribed by Cateſby, are larger than the other ſpecies of ſea tortoiſes, and have their bucklers conſiderably more raiſed. They are both extremely bad as food, and exhale a diſagreeable flavour; but they furniſh a great quantity of oil, which is uſeful for burning. We have placed them both here, at the end of the deſcription of the logger-head, until more accurate deſcriptions enable them to be properly arranged.

ART. IV. *THE NASAL TORTOISE* †.

Naſal Tortoiſe.

NATURALISTS have confounded this ſpecies with the former, though it is very

* Hiſt. Gen. des Voy. XLVIII. 344.

† La tortue naſicorne.

very readily distinguished from the logger-head, by an obvious character, which is entirely wanting in that species: This is a soft tubercle or protuberance, on the top of the muzzle, in which the nostrils are placed. It is probably this species, which is described by Gronovius*, and quoted from him by Linnaeus, as a synonime of the testudo caretta, as Gronovius mentions the distinguishing tubercle on the nose. Nasal Tortoise.

Observations are still wanting to enable us to give any detailed account of this new species, which is found in the equatorial seas of America: But we are certainly warranted, in separating it from the logger-head, to which it has even less resemblance than to the green tortoise. It is considered, like that species, as very good eating; while the logger-head, on the contrary, is hardly ever used as food †. This may possibly be what is called the bastard tortoise, by the American fishers. As it is of great importance

* Gron. Mus. ii. 85. n. 69. Gronov. Zoophyl. 1. n. 71.

† Information from the Chevalier de Widerspach.

Nafal Tortoiſe.

portance to examine the natural hiſtory of the various ſpecies of tortoiſes, both ſuch as are not thoroughly inveſtigated, and ſuch as are hitherto entirely unknown, it is recommended to voyagers, and to men of information, who live in the countries where they abound, to pay every attention to the ſubject, which its importance, both to ſcience and economy, requires. Though theſe animals differ from each other, only by a ſmall number of external characters, it appears that they do not mingle together, and they muſt, conſequently, differ very eſſentially from each other.

ART. V. *THE HAWKS-BILL TORTOISE**.

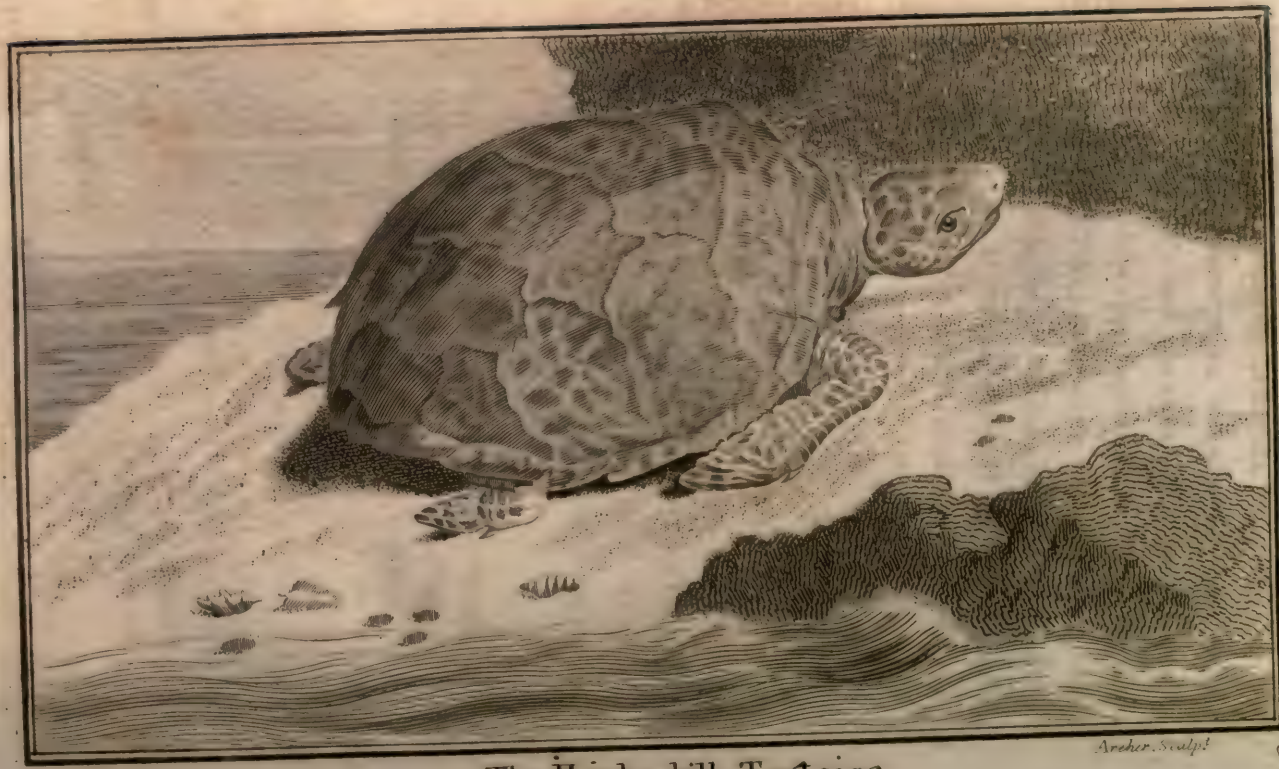
Hawksbill Tortoiſe.

PHILOSOPHERS muſt always place the green tortoiſe, in the foremoſt rank of

* Le caret.

Teſtudo imbricata: Having two claws on each foot, both before and behind; the plates of the buckler being looſe, and lapping over each other. Syſt. nat. ed. Gm. I. 1036. G. 119. ſp. 2. Schneid. Schildkr. 309. n. 3. Leipz. magaz. 1786. iii. 258.

T



The Hawks-bill Tortoise.

Pl. 2. Vol. I. p. 139.

of this genus of animals, on account of its ſuperior uſefulneſs, as an agreeable and ſalutary food to mankind; but thoſe who judge only by external appearances, will prefer this ſpecies, on account of its beauty. The name of hawks-bill is ſo generally adopted by the Engliſh ſettlers in America and the Weſt Indies, that it is here adopted inſtead of caret, which is ſaid to be univerſal among the other inhabitants of theſe countries which it frequents. Hawks-bill Tortoiſe.

It is principally from the plates that cover the buckler of this ſpecies, that the beautiful ſubſtance called tortoiſe-ſhell is procured, with which, even from the moſt remote antiquity, the ſumptuous palaces of the

T. ſquamata. Bont. jav. 82.—T. caretta. Cateſby, carol. ii. 39. Gronov. zooph. 72. Sloan, jam. ii. Ray, ſynopſ. 258.—T. marina americana. Seba, muſ. i. 130. t. 80. f. 9.

Caret. Rochefort. Du Tortue. ii. 229. n. 24. Labat. 315. Bomare. dict. hiſt. nat.

La Tuillée. Daubenton, Encycl. method.

Hawks-bill Turtle. Brown, jam. 465.

* Cateſby, ii. 39.

† Brown, Jamaica.

Hawksbill Tortoise.

the great have been adorned. In more modern times, this ornament has given place to the brilliancy of gold, and to that animation which is given by ſculpture to hard and tranſparent ſtones. It is now almoſt confined to thoſe ſimple but elegant toys, which are uſed by people of more limited fortunes, but, perhaps, of more refined taſte. Though ſtill employed occaſionally among the ornaments of beauty, it is entirely concealed by thoſe other more brilliant jewels, which are now ſo much preferred, and to which it ſerves merely as a ſupport. If, however, theſe beautiful ſcales have loſt much of their eſtimation, by compariſon with the more brilliant ſubſtances, which the diſcovery of the New World has rendered ſo common in the Old, they are likewiſe become cheaper and more plentiful, and are therefore more generally uſed now than formerly. They are employed in the conſtruction of a vaſt number of little ornamental works, which are well known, and for which they are excellently adapted; as they unite, to the ſemitranſparency and beautiful poliſh of

certain

certain coloured ſtones and criſtals, a degree of toughneſs and flexibility, which has been in vain attempted to be given to glaſs. Hawks-bill Tortoiſe.

The hawks-bill tortoiſe is very readily diſtinguiſhed, from all the other ſpecies, by the brilliancy of the plates, which cover its buckler; and ſtill more, by the manner in which theſe plates are diſpoſed, being arranged like ſlates or tiles on a roof, lapping over each other, or what is called imbricated. The middle of the buckler is generally covered by thirteen of theſe plates, diſpoſed in three rows. The rim or border, which is conſiderably narrower than in moſt of the ſea tortoiſes, is, for the moſt part, furniſhed with twenty-five plates.

The buckler is rounded at its fore part, and pointed behind, having ſomewhat of what is called the form of a heart. It is farther diſtinguiſhed, from the other ſea tortoiſes, by its head and neck being conſiderably longer. The upper jaw advances ſo much beyond the lower, as to give the muzzle a diſtant reſemblance to the bill of

Hawks-bill Tortoiſe.

a bird of prey; from which circumſtance the Engliſh name is derived. That name, however, has contributed to obſcure this part of natural hiſtory: For, when ſome naturaliſts had given the name caret, which properly belongs to this ſpecies, to the logger-head*, they neglected to diſtinguiſh between it and the hawks-bill, which name has likewiſe been given by ſome to the logger-head†; and, in natural hiſtory, when the ſame name has been applied to different ſpecies, the ſpecies themſelves are very apt to be confounded, by haſtily ſuppoſing that the objects agree as well as the names.

The hawks-bill, like moſt of the ſea tortoiſes, is found in the warm countries of America‡; and it is likewiſe found in the ſeas of Aſia. From theſe laſt the Romans procured their beautiful tortoiſe-ſhell, ſo much in requeſt even before the time of Pliny. It ſeems to have been then eſteemed

* Cateſby, Carol. ii. 39.

† Brown, Jamaica.

‡ According to Dampier, the hawks-bill is not found in the South Sea.

ed in proportion to its ſcarcity, and to the diſtance from which it was brought; for that haughty people appear to have appreciated the value of commodities, according as the diſtance of their origin indicated the extent and magnitude of their dominion. Hawksbill Tortoiſe.

This ſpecies is not nearly ſo large as the green tortoiſe. Its feet, like thoſe of the other ſea tortoiſes, are formed like fins; and each is ſometimes furniſhed with four claws. In north America, the female lays her eggs in May, June, and July: She does not depoſite them in the ſand, but in fine gravel mixed with ſmall ſhells. The eggs are reckoned even more delicate than thoſe of other tortoiſes; but the fleſh is not at all agreeable, and is ſaid to occaſion ſevere vomiting and looſeneſs*. Thoſe who eat of it, are ſoon after ſeized with a violent fever, and break out with ſmall puſtules or tumors, all over the body, which prove a favourable criſis, in ſuch as have ſufficient ſtrength to reſiſt the violence of the fever. Dampier alledges, that

* Dampiers Voy. Vol. I.

Hawks-bill Tortoise.

that the good or bad quality of the flesh of this species depends on the nature of the food of the individuals, and consequently on the particular places which they inhabit.

Though the hawks-bill is considerably smaller than the green tortoise, it must be stronger, as it is reported to be more mischievous, and to defend itself better when attacked, giving very severe and painful bites. The buckler is more convex, and the fore paws are longer, in proportion, than in the other sea species: From these circumstances, it is able, when turned on its back, by rolling to one side, and getting hold of the ground with its feet, to recover its recumbent posture. The beautiful plates, with which its buckler is covered, weigh usually three or four pounds altogether*, and sometimes even as far as seven or eight †. Those are most valued which are thick, clear, transparent, and of a golden yellow colour, marbled with red and white, or with a very dark

* Dampier, loc. citat.

† Ray, Synopf. 258.

dark brown*. To form theſe into various ſhapes, they are ſoftened in hot water, and then forced into moulds, by means of a ſtrong iron preſs. They are afterwards poliſhed, and either inlaid with gold or ſilver, or other ſubſtances are added to increaſe the ornament, or to heighten their colours. Hawks-bill Tortoiſe.

It is alledged, by the Chevalier de Widerſpach, that the hawks-bill, in ſome countries, particularly on the marſhy ſhores of the eaſtern coaſt of South America, prefers the drowned lands to the ſea, becauſe it there finds either a more abundant or a more agreeable food. Cateſby ſays, that it chiefly feeds on a kind of fungus, which the Americans call jews-ear.

* M. S. Mem. of M. de Fougeroux.

ART. VI. *THE LEATHERN TORTOISE**.

Leathern Tortoise.

THOUGH moſt of the ſea tortoiſes, which have been hitherto mentioned, do not wander far from the equatorial and tropical regions, the logger-head is not the only ſpecies that is found in the European ſeas. Another ſpecies, which ſometimes even exceeds the largeſt green tortoiſes in length, is frequently found in the Mediterranean; which, particularly in the ſeaſon for laying its eggs, prefers the deſert ſandy ſhores of the Barbary ſtates. This ſpecies, which is here named, from the peculiar appearance of its buckler, the leathern tortoiſe, ſeldom

* Le Luth, in Latin Lyra.

Teſtudo coriacea: Having a leathern buckler, ridged longitudinally. Syſt. nat. ed. Gm. 1. 1036. G. 119. ſp. 1. Schneid. Schildk. 312. n. 4. Vandell. ad Lin. Rondelet. piſc. 445. Geſn. aquat. 946.

Tortue luth. Encycl. method.—Rat de mer, Tortue à clin. Bomare.

Coriaceous Turtle. Brit. zool. iii. p. 7. 8. Phil. tranſ. lxi. 275. t. 10. f. 4. 5.

Archer. Sculp.

The Leathern Tortoise.

Leathern Tortoiſe.

ſeldom goes far up the Adriatic Gulph, and ſtill more rarely into the Black Sea, on account of the coldneſs of theſe more northerly latitudes.

This ſpecies is diſtinguiſhed from all other tortoiſes, both ſuch as inhabit the ſea and the land, by having no breaſtplate. The buckler is placed, as in the others, on its back, but is not long enough, either before or behind, to admit of concealing the head, feet, and tail, under its defence. In this circumſtance, it may be conſidered as holding a kind of middle place between the large ſea tortoiſes and the crocodile. The buckler is convex, and rounded at the edges, but terminates backwards in a long pointed proceſs, having the appearance of a ſecond tail, immediately over the real one. The buckler is marked with five elevated longitudinal ridges, along its whole length, that on the middle of the back being more prominent than the reſt. Some naturaliſts have deſcribed ſeven of theſe ridges, as they have included the edges of the buckler. There are no plates of tortoiſe-ſhell on this

Leathern Tortoiſe.

buckler, as in the other ſpecies; but it, as well as the whole unarmed parts of the body, with the head, feet, and tail, are covered by a thick tough black ſkin, reſembling leather, from which the trivial names, in Engliſh and Latin, are derived. In this circumſtance, it has more analogy than the reſt of the genus with the phocine tribe of viviparous quadrupeds. The paws, or fins, are entirely deſtitute of claws, according to moſt naturaliſts; but I have obſerved a kind of membranous claw on each hind foot, in the ſpecimen which is preſerved in the Royal Cabinet. The extremity of the upper jaw is divided, ſo as to receive the point of the lower, which has a curvature or crook upwards.

Rondèletius ſays, that he ſaw a tortoiſe of this ſpecies, which had been caught at Frontignan, on the coaſt Languedoc, which meaſured five cubits, or ſeven feet and a half, long, by two cubits, or three feet, broad; and which produced a large quantity of oil fit for burning*. M. Amoureux of the Montpellier Society, has given a deſcription

* Rondelet. Piſc. 445.

Leathern Tortoise.

cription of a tortoiſe, likewiſe of this ſpecies, which was caught at Cette in Languedoc, meaſuring ſeven feet five inches in length *. The ſpecimen from which our preſent deſcription was taken meaſures as follows.

	Feet.	Inches.	Lines.
Total length - -	7	3	2
Circumference - -	7	0	1
Thickneſs - -	1	8	0
Length of the buckler -	4	8	2
Breadth of ditto - -	4	4	0
Length of the neck and head	1	5	9
Length of the jaws -	0	8	6
Circumference of the neck	2	11	0
Diameter of each eye -	0	2	0
Length of each fore paw	3	1	0
Circumference of ditto -	1	11	6
Length of each hind paw	1	6	0
Circumference of ditto -	1	7	10
Length of the tail -	1	1	0

The Leathern tortoiſe, beſides the Mediterranean, is found on the coaſts of Peru and Mexico, and on almoſt all the coaſt of

* Journal de Phyſique, 1778.

Leathern Tortoise.

Africa within the Torrid Zone *. It likewise appears to come into the higher latitudes of Europe, particularly during the height of summer. On the fourth of Auguſt 1729, a tortoiſe was caught thirteen leagues off Nantz, to the north of the mouth of the Loire, which meaſured ſeven feet and an inch in length, by three feet ſeven inches broad, and two feet in thickneſs. M. de la Font, then chief engineer at Nantz, ſent the deſcription of this individual to M. de Mairan: It agrees in every particular with the ſpecimen preſerved in the Royal Cabinet, only that M. de la Font mentions its having teeth, which are not hitherto found in any other ſpecies of tortoiſe. It is very eaſy, however, to explain this ſeeming contradiction; as the great projecting proceſſes, which are formed in both jaws, with deep interveening notches, might very readily have been miſtaken for teeth; and the real ſituation and form of theſe proceſſes, exactly agree with thoſe of the pretended teeth in the Nantz tortoiſe.

* M. S. Mem. of M. de Fougeroux.

tortoiſe. M. de la Font relates, that when the people were breaking its ſkull, with repeated blows of an iron crow, it ſent forth horrible cries, which might have been heard at the diſtance of a quarter of a league, and at the ſame time its mouth foamed with rage, and emitted a very fetid odour*. Leathern Tortoiſe.

In the year 1756, a tolerably large Leathern tortoiſe was caught on the coaſt of Cornwall, ſome time after the middle of ſummer †. Mr Pennant, in the Philoſophical Tranſactions for 1771, gives the deſcription and figure of a ſea tortoiſe, three inches and a quarter long by an inch and a half broad, which that celebrated naturaliſt ſaw in poſſeſſion of a London merchant, who could give no information of the place from whence it had been brought. It is evident, both from the figure and deſcription, that this was a very young individual of the Leathern ſpecies, and had been

* Hiſt. de l'Acad. des Sciences, 1729.

† Brit. Zool. II.

Leathern Tortoiſe.

caught immediately after it came out of the egg.

This is one of the ſpecies of tortoiſe, with which the ancient Greeks were beſt acquainted, as it frequented the ſhores of their own country. It is well known, that, in ancient Greece and the other countries bordering on the Mediterranean, the buckler of a large tortoiſe was uſed, by the inventors of muſic, as the body of an inſtrument, to which they fixed various ſtrings, either made of cat-gut or of metal. It is ſaid that they employed for this purpoſe the buckler of the leathern tortoiſe, which thus became the original lute or lyre, from which theſe nations, even while hardly beginning to be civilized, enjoyed the firſt rude ſtrains of an art they afterwards brought to ſo much perfection. Hence this ſpecies of tortoiſe acquired the name of the inſtrument, and was itſelf conſidered as ſacred to Mercury, the ſuppoſed inventor of the lyre. The moderns have, in ſome countries, continued the ancient names, of lute and lyre, to this tortoiſe; thereby

thereby very properly perpetuating the remembrance of the noble employment to which its buckler was destined, in the early ages of the fine countries which surround the Mediterranean. Leathern Tortoise.

II. DIVI-

II. DIVISION.

FRESH WATER AND LAND TORTOISES.

Fresh water and Land Tortoises.

THE different tortoises which we have already described, in the foregoing division, are not entirely confined to the salt water, but sometimes frequent the mouths of the fresh water rivers, which fall into the sea, and sometimes come on the dry land, either on purpose to deposite their eggs, in proper situations, or to brouze on such plants as they find there, and are fit for their nourishment. They are not therefore exclusively inhabitants of the ocean; neither are any of the species, which yet remain to be described, absolutely confined either to the fresh water, or to the dry land: All the species of the genus are capable of living on the land, and all of

of them are able to ſubſiſt for ſome time, longer or ſhorter according to circumſtances in the ſeveral ſpecies, both in the freſh water and in the ſea. We are, therefore, to underſtand what has been already ſaid, concerning the habitation of the ſea tortoiſes, and what ſtill remains, reſpecting the haunts of the freſh water and land tortoiſes, only as pointing out the ſituation which they prefer, and by no means as fixing them excluſively to one place or mode of reſidence. All that can be affirmed, with perfect certainty, reſpecting theſe three families or diviſions of the genus, is, that the firſt is moſt commonly found in the ſea, the ſecond in freſh waters, and the third on elevated dry land, or in the woods. Their particular reſidence, in the ſeveral ſpecies, is modified or determined by their peculiar conformation, both external and internal, and by the nature of the food which each requires, and which they can only find in the kind of reſidence to which theſe circumſtances impel them.

Freſh water and Land Tortoiſe.

ART.

ART. VII. *MUD TORTOISE**.

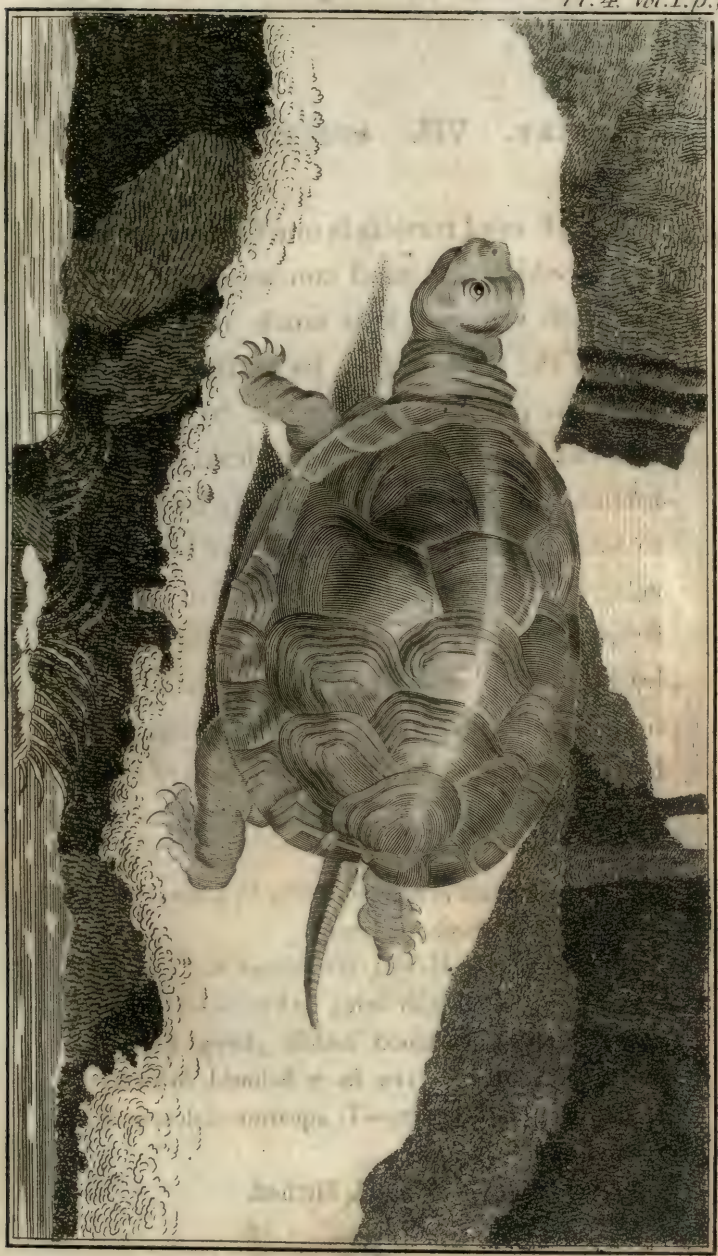
Mud Tortoiſe.

THE mud tortoiſe is one of thoſe ſpecies which are moſt commonly found in the freſh waters. It is much ſmaller than any of the ſea tortoiſes; its extreme length, from the point of the muzzle to the tip of the tail, ſeldom exceeding ſeven or eight inches, and its breadth is uſually from three to four inches. The rim of the buckler is generally covered by twenty-five ſlightly ſtriated plates; and the middle is covered by thirteen plates, which are likewiſe ſtriated, and ſlightly raiſed in the center; the five middle plates on the back are raiſed into

* La Bourbeuſe; mus aquatilis, in Latin; jogame, doogame, or doocame, in Japan.

Teſtudo lutaria: Having the tail not half the length of the body; the buckler being rather ſmooth, and ridged on the three backmoſt middle plates. Syſt. Nat. ed. Gm. I. 1040. G. 119. ſp. 7. Schneid. Schildkr. n. 9. Rondelet. piſc. ii. 170.—T. aquarum dulcium. Ray, Synopſ. 254.

Tortue bourbeuſe. Encycl. Method.



Archen Sculp.

The Mud Tortoise.

into a longitudinal ridge. The whole of this buckler is blackiſh, deeper or lighter in different individuals. The hinder part of the breaſtplate ends in a ſtraight line. The whole ſkin of the head, neck, and paws is blackiſh. Mud Tortoiſe.

The toes in this ſpecies are very diſtinct, and are united together by webs or membranes. The fore paws have each five toes, and the hind feet four; and the outer toe on each of the fore feet has for the moſt part no claw. The tail is nearly half the length of the buckler, and, inſtead of being drawn under the upper covering, as in moſt land tortoiſes, it is carried ſtretched out, when the animal walks *: From this circumſtance, the mud tortoiſe was called *mus aquatilis*, or water rat, by ſome of the ancients †. When it is ſeen moving at ſome diſtance, it appears like a lizard concealed in the ſhell of a tortoiſe. This ſpecies, like moſt or all of the tortoiſes, ſometimes emits an interrupted whiſtle or ſigh.

The

* Cett. Hiſt. Nat. Amphib. et Piſc. Sard. p. 12.

† Rondelet. Piſc. ii. 170.

Mud Tortoiſe.

The mud tortoiſe is found in all the warm and temperate climates of Europe, being very plentiful in all the rivers of Sardinia *; and is likewiſe found in Aſia, Japan †, and India. It is met with in much higher latitudes than the ſea tortoiſes, having been ſometimes caught in the rivers of Sileſia; but it is by no means well fitted to ſupport the rigour of northern climates, and is not able to reproduce in theſe. Even in the temperate countries it becomes torpid in winter, and remains on the land during its ſtate of hybernation. In Languedoc, it begins to prepare for its winter retreat towards the end of autumn, and generally employs more than four weeks in digging its hole, which ſeldom exceeds ſix inches in depth. It even frequently paſſes the whole winter without being entirely covered; as the earth, which it has dug out, does not always fall back again, after it has taken its abode at the bottom of the hole.

In the early part of the ſpring, it quits this winter reſidence, and immediately takes to

* Cetti, loco ſupra citat.

† Hiſt. Gen. des Voy. XL. 382.

Mud Tortoiſe.

to the water, in which it ſpends the greateſt part of its time, until the ſummer, when it is moſtly on the land. While in the water, it is very often at the ſurface, eſpecially in fine weather, and in ſun ſhine. It multiplies remarkably, as I have been informed by M. de Touchy, in ſome parts of Languedoc and Provence, particularly near the Rhone, and in the marſhes of Arles. M. de la Tour d'Aygue, whoſe taſte and attainments in natural ſcience are well known, has informed us, that ſuch an immenſe number of mud tortoiſes were at one time found, in a marſh in the plain of Durance, not more than half a league in extent, as to ſerve the whole neighbouring peaſantry in food, for more than three months.

The mud tortoiſe lays its eggs always on dry land, digging a hole and covering them with earth or ſand. The outer covering of their eggs is harder than in thoſe of the green tortoiſe, and their colour is more variable. The young tortoiſes, immediately

Mud Tortoiſe.

ly after coming out of the egg, are ſometimes leſs than half an inch in breadth.

This ſpecies, like the ſea tortoiſes, continues to grow for a long time; but, being conſiderably ſmaller, they acquire their full ſize in much leſs time than the large ſea tortoiſes, and they do not live to ſo great an age. It is, however, well known that, if they do not meet with accidents to ſhorten their lives, they will live more than eighty years; and this circumſtance is a ſtrong preſumption, in proof of the very long life we have formerly attributed to the large ſea ſpecies.

The mud tortoiſe, having the toes conſiderably more ſeparated, and having leſs weight to carry than the other ſpecies, is able to walk much quicker on land, eſpecially when the ground is ſmooth.

This ſpecies is very uſeful in gardens, in conſequence of its being remarkably fond of feeding on ſnails, worms, and ſuch wingleſs inſects as frequent the neighbourhood of its haunts; it frees the gardens from theſe noxious vermin, and is itſelf incapable of doing

doing harm. For this purpoſe it is kept in ponds, taking care to place a plank from the edge of the pond to the bottom of the water, to aſſiſt its progreſs, unleſs when the banks of the pond are ſufficiently ſloped to allow it to crawl eaſily up and down. It is likewiſe often kept in theſe ponds, on account of its being conſidered as an uſeful remedy in ſome diſeaſes. When there is reaſon to ſuſpect that it may not find ſufficient food in the garden, it is neceſſary to ſupply the deficiency, by placing ſome meal or bran near the edge of the pond. Like all the other ſpecies of the genus, it is capable of living a very long time without food; and will even live ſome time after the head is cut off*. Mud Tortoiſe.

Though remarkably uſeful for clearing gardens of noxious vermin, and on that account often bred in ponds with great care, it is neceſſary to prevent it from getting into fiſh ponds, as it is extremely deſtructive to their inhabitants: It attacks thoſe of a certain ſize, ſeiſing them by the belly, and

 inflicting

* Ray, Synopſ. Anim. 254.

Mud Tortoiſe.

inflicting ſuch wounds as very ſoon prove mortal; it then drags them to the bottom of the water, and devours them, leaving only the bones of the back and of the head, and ſometimes likewiſe it rejects the ſound or air bladder; and it is ſaid that, by the number of fiſh ſounds, which are ſeen floating on the ſurface, people are enabled to judge of the abundance of mud tortoiſes that are to be found in particular lakes or pools of water.

ART. VIII. *THE ROUND TORTOISE* *.

Round Tortoiſe.

ACCORDING to Linnaeus, this ſpecies, the trivial name of which, both in Latin, French, and Engliſh, is derived from the round form of its buckler, is found in the ſouth of Europe, and even extends as far north as Pruſſia. In two individuals of

† La Ronde. Encycl. Method.

Teſtudo orbicularis: Having a round, ſmooth, flattiſh buckler. Syſt. Nat. Ed. Gm. 1. 1039. G. 119. ſp. 5.—T. Europaea, Schneid. Schildkr. 323. n. 5.

The Round Tortoise.

Archer. Sculp.

Round Tortoiſe.

of this ſpecies, which are preſerved in the Royal Cabinet, the rim or border of the buckler is covered by twenty-three plates, and the middle by thirteen: Theſe plates are very ſmooth, and of a clear brown colour, with ſpots of various reddiſh ſhades. The breaſtplate, which is covered by twelve plates, is notched at its poſterior edge. The muzzle terminates in a hard ſharp point, like a little horn. The tail is very ſhort. The toes, which are united by a common membrane, are gathered together into a round compact paw, and are hardly diſtinguiſhable from each other, except by their claws, which are tolerably long and very ſtrong. Of theſe claws, there are five on each fore paw, and four on each behind. This ſpecies, like the mud tortoiſe, prefers rivers and marſhes for its reſidence; and only differs in its habits from the foregoing, ſo far as theſe are modified by the difference of their powers.

In Pruſſia, the peaſants keep ſome individuals of this ſpecies in the veſſels which

Round Tortoise.

contain the food of their hogs *, thinking that these latter animals are thereby kept in better health, and are more easily fattened; and the tortoises sometimes live above two years in that strange habitation.

Though the two specimens, in the Royal Cabinet, from which this description was drawn up, measure only three inches and three quarters long, by two inches and a half in breadth, it is probable that the species, sometimes at least, grows to a larger size, for both these individuals have every appearance of being young, and of not having attained their full dimensions. Should this be really the case, there is reason to suspect, that the round tortoise may only be a variety of the terrapin; but it will require additional information to decide that point, and, in the mean time, it is necessary to leave them as separate species.

In these two specimens, the plates of the breastplate before the hindmost were somewhat separated, leaving part of the skin of the belly naked, which formed a projecting

* Wulff, Ichthyol. cum Amphib. regn. Borus.

ing bag or pouch, in which the mark of the naval ſtring was diſtinctly perceptible: This bag was larger in one of the ſpecimens than in the other. It is worthy the attention of naturaliſts to aſcertain whether this ſingular circumſtance be univerſal in all the ſpecies of the genus. A ſimilar conformation has been obſerved in crocodiles and ſome ſpecies of lizards; and, perhaps, it will be found, on examination, in a great number of ſpecies, in the claſs of oviparous quadrupeds, if not in them all. Round. Tortoiſe.

ART. IX. *THE TERRAPIN* *.

TO this tortoiſe, which inhabits the marſhes and freſh waters, the name given by Brown, in his Natural Hiſtory of Terrapin.

* La Terrapène. This being the cuſtomary Engliſh name, in the Weſt Indies and North America, is here retained.

Teſtudo paluſtris: Having five claws on each fore paw, and four on each behind; the buckler being flattiſh, or depreſſed. Syſt. nat. ed. Gmel. 1. 1041. G. 119. ſp. 23. Brown, jam. 466. n. 4.

Terrapin. Jamaica, is here preſerved. It is very common in the Weſt India iſlands, particularly in Jamaica, frequenting lakes and marſhes, among the aquatic plants. The buckler, according to Brown, is oval and depreſſed or flattened, and ſometimes exceeds eight or nine inches in length. The fleſh is conſidered as both delicate and wholeſome.

This is probably the ſame ſpecies to which Dampier gives the name of *Hecate*. According to that writer, it inhabits pools and lakes of freſh water, going very ſeldom on the dry ground. It weighs twelve or fifteen pounds. The legs are ſhort, and the feet flat; the neck is long and thin. The fleſh is excellent food. All theſe circumſtances related by Dampier, agree extremely well with the terrapin; but farther obſervations are neceſſary to aſcertain the exact identity or difference.

ART. X. *THE SERPENTINE TORTOISE**.

Serpentine Tortoise.

THIS ſpecies derives its trivial name from a reſemblance between its head and that of a ſerpent. It is remarkably diſtinguiſhed from all other tortoiſes by the length of its tail, which is nearly as long as the buckler. The buckler has a ſlight longitudinal ridge on the middle; and its hinder part, which is broad, is notched in ſuch a manner as to preſent five ſharp tooth-like proceſſes. The toes are diſtinct, but are very little ſeparated from each other.

The ſerpentine tortoiſe inhabits the freſh waters of China, and ſeems to reſemble the mud tortoiſe in its manners, as it is ſaid to live on various inſects, and to deſtroy fiſh.

* La Serpentine. Encyclop. Method.

Teſtudo ſerpentina: Having the buckler ſlightly ridged along its middle, the hinder part being obtuſe, and having five ſharp pointed proceſſes; the tail being as long as the body. Syſt. nat. ed Gm. 1. 1042. G. 119. ſp. 15. Muſ. ad. frid. ii. 36. *. Schneid. Schildkr. n. 8.

ART. XI. *THE PENSYLVANIAN TORTOISE**.

Penſylvanian Tortoiſe.

THIS ſpecies, of which we here only preſent a very imperfect account, was ſent from Penſylvania to England, under the name of marſh tortoiſe, and was engraved and deſcribed by Mr Edwards, in his Gleanings of Natural Hiſtory. The tip of its tail is armed with a ſharp horny point, as in the ſcorpion tortoiſe, and ſeveral individuals of the common land tortoiſe. The toes are united by a web. The general colour is brown, but the plates on the ſides of the body, on the jaws, and round the eyes, are reddiſh yellow, which colour is likewiſe found on the breaſtplate.

ART.

* La Rougeatre.

Teſtudo Penſylvanica: Having five claws on each fore foot, and four on each behind; the tip of the tail being armed with a ſharp horny point. Syſt. nat. ed. Gm. 1. 1042. G. 119. ſp. 26. Seligman, av. viii. t. 77. Edw. av. t. 287.

ART. XII. *THE SCORPION TORTOISE* *.

Scorpion Tortoiſe.

OF this ſpecies, which was firſt deſcribed by the celebrated Linnaeus, ſeveral bucklers and breaſtplates are preſerved in the Royal Cabinet. Theſe were ſent as having belonged to a ſmall marſh tortoiſe, which inhabits the drowned Savannas of Guiana, which never exceeds ſix or ſeven inches in length, by four or five in breadth. This is another inſtance of a marſh or freſh water tortoiſe having its tail armed with a ſharp calloſity; and we ſhall hereafter find a very ſimilar character in ſeveral of the land ſpecies, particularly ſuch as are full grown.

The buckler of this ſpecies is of an oval figure, with three longitudinal ridges on the

* La Tortue Scorpion. Encyclop. Method.

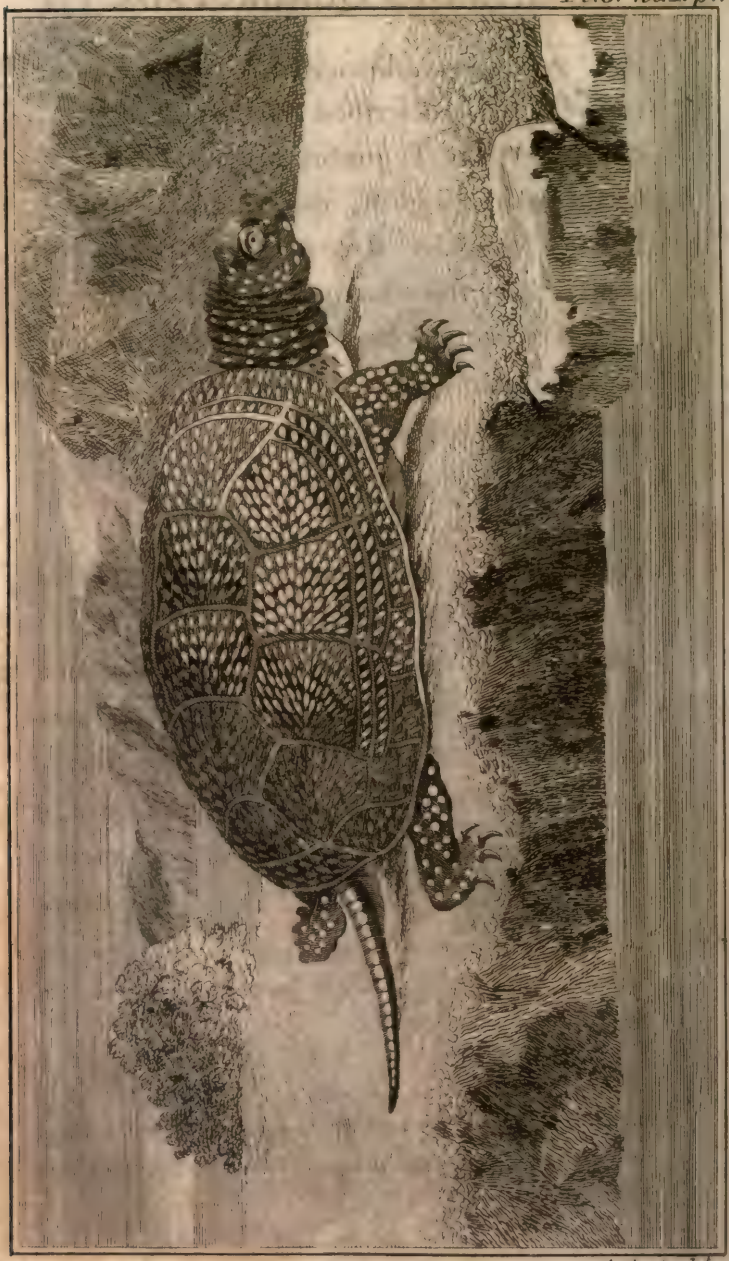
Teſtudo Scorpioides: Having a three-lobed callous knob on the forehead; the tail being armed with a claw; with five claws on each fore foot, and four on each hind foot. Syſt. Nat. ed. Gm. 1. 1041. G. 119. ſp. 8. T. fimbriata. Schneid. Schildkr. n. 12.

Scorpion Tortoiſe.

the middle of the back: The rim has uſually twenty-three plates, and the middle is covered by thirteen, the five of the middle row being much lengthened: The colour of the buckler is black, or very dark brown. The fore part of the head is covered by a hard callous ſkin, which is elevated into three lobes or knobs on the front. The breaſtplate, which is ſcarcely at all notched at its edges, is covered by twelve plates. Each foot has five toes, all of which, except the outermoſt toe of each hind foot, are armed with claws. Its moſt remarkable character is a hard pointed horn or claw on the tip of the tail, ſomewhat reſembling the weapon of a ſcorpion, from which the trivial name is derived.

Fringed Tortoiſe.

The T. fimbriata, of Schneider, which is quoted as a ſynonime to this ſpecies, by M. de la Cepede, is reckoned diſtinct by Gmelin, in his late edition of the Syſtema Naturae, though he acknowledges that it has



Archer Sculp.

The Spotted Tortoise.

has great reſemblance to the ſcorpion tortoiſe. As deſcribed by Gmelin from Schneider, the T. fimbriata, or, as it might be called in Engliſh, the fringed tortoiſe, has the buckler ſtriated, and rough or prickly; the front having a calloſity, conſiſting of three knobs. The head is flat and three cornered, having a very long and much wrinkled neck *. Fringed Tortoiſe.

ART. XIII. *THE SPOTTED TORTOISE* †.

OF this new ſpecies, which has not been hitherto deſcribed by any naturaliſt, we have ſeen ſeveral living individuals, which had been ſent from America ‡, in tubs of water, to be employed in medicine. Spotted Tortoiſe.

* Syſt. Nat. ed. Gm. 1. 1043. G. 119. ſp. 28. Schneid. Schildkr. 349. n. 12. Barrere, fr. equin. 60. 165. Ferm. ſurin. ii. 226.

† La Jaune.

‡ Though it is not ſaid what part of America they came from, it was moſt probably from the French colony of Cayenne.—T.

Spotted Tortoiſe.

cine. It is likewiſe found in the iſland of Aſcenſion, from whence one ſpecimen was brought to the Royal Cabinet; and it inhabits the freſh waters in ſome parts of Europe, the European ſpecimens only differing in having their colours leſs brilliant.

This beautiful tortoiſe commonly grows to almoſt double the ſize of the mud tortoiſe; the buckler of one ſpecimen, in the Royal Collection, being ſeven inches and three quarters in length. It is beautifully variegated with darkiſh graſs green, and golden yellow; the ground colour of its whole body, buckler, head, neck, paws, and tail, being green, elegantly variegated with a vaſt number of ſmall yellow ſpots, placed very near each other, ſometimes touching, and in many parts diſpoſed in a radiated order. The middle of the buckler has uſually thirteen plates, and the border twenty-five. The breaſtplate is covered by twelve plates, and its poſterior part terminates in a ſtraight tranſverſe line, as in the mud ſpecies, with which this has conſiderable reſemblance. The tail is ſlender,

der, and almoſt half the length of the buckler, and is carried extended ſtraight out, when the animal walks, which it does with more agility than the land tortoiſes, and is agreeable to look at, both on account of its elegant motions, and from the uncommon beauty of its colours. When about to unite in the act of love, it emits a ſlight ſigh or whiſtling noiſe. One of the ſpecimens of this ſpecies, received by the Royal Cabinet, was tranſmitted under the name of land tortoiſe; the miſtake probably ariſing from this circumſtance, that all the freſh water tortoiſes paſs a very conſiderable part of the year on land, as has been already mentioned, when deſcribing the mud tortoiſe.

Spotted Tortoiſe.

ART. XIV. *THE SOFT TORTOISE**.

THIS, which is the largeſt of the freſh water tortoiſes, was firſt deſcribed by Mr

Soft Tortoiſe.

* La Molle.

Teſtudo ferox: Having an oval cartilaginous buckler,

Soft Tortoise.

Mr Pennant; Dr Garden, who had received two ſpecimens from South Carolina, having ſent one to that celebrated Engliſh naturaliſt, and the other to Mr Ellis. It is found in the ſouthern rivers of Carolina, and is called in that country, the ſoft-ſcaled tortoiſe; but, as it has in reality no ſcales, it is here only called the ſoft tortoiſe. In the rivers Savanna and Alatamaha, it is very numerous, and Dr Garden was informed that it is likewiſe very common in the rivers of Eaſt Florida. It grows to a very conſiderable ſize, ſometimes weighing as far as ſeventy pounds: One of the ſpecimens received by Dr Garden weighed between twenty-five and thirty pounds; he kept it near three months in his houſe, during which period he could never perceive that it took any nouriſhment, though a great number of different articles was preſented to it as food.

The

ler, and prominent cylindrical muzzle; each foot having three claws. Syſt. Nat. ed. Gmel. 1. 1039. G. 119. ſp. 20. Schneid. Schildkr. 330. n. 6. Pennant. in Phil. Tranſ. LXI. 266. t. 10. f. 1. 2. 3.

Archer Sculpt

The Soft Tortoise.

Soft Tortoise.

The buckler, of that individual, was twenty inches long, by fourteen in breadth; its general colour being deep brown, with a greeniſh tinge. The middle part of the buckler was hard, ſtrong, and bony; but the border, and particularly its hinder part, was ſoft, pliable, and cartilaginous, reſembling tanned leather, giving way in all directions to preſſure, yet firm enough to defend the animal againſt injuries. The buckler was garniſhed with ſmooth oblong elevations, near the hinder part, and towards the head with ſimilar but larger elevations.

The breaſtplate was of a beautiful whitiſh colour, and extended two or three inches farther forwards than the buckler, ſo that when the head was withdrawn it could reſt on this part, which was ſoft and flexible. The hinder part was hard, bony, and raiſed in ſuch a manner as to reſemble a ſaddle.

The head is ſmall, and ſomewhat of a triangular form, enlarging towards the neck, which is very thick, and meaſured thirteen inches and a half long, yet was eaſily withdrawn

Soft Tortoise.

drawn within the buckler. The eyes are ſituated in the upper and anterior part of the head, rather near each other; having large moveable eyelids, ſmall round pupils, and the irides of a lively yellow colour; and they are provided with the membrana nictitans, which are ſhut either on account of fear, or when the animal ſleeps. The mouth is placed in the lower part of the face, as in other tortoiſes, each jaw conſiſting of one bone. One of the moſt remarkable characters of this ſpecies is the form of the muzzle and poſition of the noſtrils: The upper part of the upper jaw terminates in a ſomewhat cylindrical cartilaginous production, at leaſt three quarters of an inch long, like the ſnout of a mole, but ſlender, weak, and almoſt tranſparent; and at the extremity of this muzzle the noſtrils are ſituated, having likewiſe an opening into the palate.

The paws are thick and ſtrong; the fore feet having each five true toes, three of which are ſtronger and ſhorter than the reſt, and having crooked claws, while the other

other two have no nails, and beyond them are two falſe or ſupernumerary toes, which aſſiſt with the other five to keep extended a conſiderable web, which unites all the ſeven. The hind feet are exactly ſimilar, having only one ſupernumerary toe on each. All the four feet, and the legs, are covered by a wrinkled ſkin, of a duſky greeniſh colour. The tail is large, thick, and ſhort. Soft Tortoiſe.

The ſoft tortoiſe is excellent eating, and is even ſaid to be preferable to the green tortoiſe. It is very ſtrong, and more active than moſt of the genus; and, being very wild, it is very apt, when attacked, to raiſe itſelf upon its feet from the ground, and ſpring furiouſly on its enemy, which it bites with great violence. The individual kept by Dr Garden was female; ſhe laid fifteen eggs while in his poſſeſſion, and about an equal number were found within her body after death. The eggs were perfectly ſpherical, and near an inch in diameter.

Soft Tortoise.

We are satisfied, that, when the animals of the New World become better known, this species, which has hitherto only been found in the rivers of Carolina and Florida, will be discovered in many other parts both of North and South America. When the Chevalier de Widerspach, an officer in the battalion of Guiana, and correspondent of the Royal Cabinet, was on the banks of the Oyapock in North America, his negroes brought him the head and several other parts of a fresh water tortoise, which they had torn to pieces, and which he since thinks to have been the same with this soft tortoise of Mr Pennant.

ART. XV. *THE CARTILAGINOUS TORTOISE**.

Cartilaginous Tortoise.

THE cartilaginous tortoise of Boddaert is quoted by M. de la Cepede as a synonime of the former species, but, on the authority

* Testudo cartilaginea: Having a round membranous buckler, which is striated on the back; the muzzle-

Cartilaginous Tortoise.

authority of Schneider and Gmelin, is here enumerated ſeparately. Its place of reſidence is not mentioned, but it is ſaid to be very rare. It agrees with the ſoft ſpecies in the conſiſtency of its buckler, and in the form of its ſnout. The buckler is rough, with elevated little knobs; part of its edge is notched, and ſeems rolled back; its anterior part is elevated in the middle, and the hinder part is depreſſed or flattened. The breaſtplate is as long at its fore part as the buckler; and neither the buckler nor breaſtplate have any ſcales or plates. The head is depreſſed or flattened on its upper part; the lips being wide, and of a yellow colour, have the upper lip curled out forewards and upwards, and the lower lip downwards and backwards. The noſe or muzzle is cylindrical and elongated, having the noſtrils at the extremity. The opening

zle being long and cylindrical; each foot having three claws. Syſt. Nat. ed. Gm. 1. 1039. G. 119. ſp. 19. Boddaert, Berl. Nat. fr. Schr. iii. 265.—T. Boddaerti. Schneider, in Leipz, Magaz. zur. naturk. u. Oekon. 1786, iii. 263. t. 2.

Cartilaginous Tortoiſe.

of the eyes are horizontal, the upper eyelid being thicker than the lower. The feet have each five toes, of which three on each foot are armed with claws.

If this be not a different ſpecies from the ſoft tortoiſe, it is at leaſt a variety, as may be obſerved by comparing the two deſcriptions. It eſpecially differs, in wanting the falſe or ſupernumerary toes. Beſides this ſpecies, Gmelin enumerates two others, which he ſuſpects to be either the ſame with this, or varieties. One of theſe, which he calls the Membranous tortoiſe *, has an oval ſtriated buckler of a grey colour; is very ſmall, and is found in the ſea near Guiana. The other, which he names the Three-clawed tortoiſe †, is found in the Nile;

* Teſtudo membranacea: Having an oval, membranous, ſtriated, grey, buckler; with three claws on each foot. Syſt. Nat. ed. Gm. i. 1039. G. 119. ſp. 17. Blumenb. Nat. 257. n. i. Schneid. Schildkr. t. 1.

† Teſtudo triunguis: Having a round buckler, elevated and wrinkled in the middle, the border being ſmooth and more depreſſed; with three claws on each foot. Syſt. Nat. ed. Gm. i. 1039. G. 119. ſp. 18. Forſk. Faun. arab. p. 9.

The Common Land Tortoise. Archer Sculp!

Nile; the middle of its buckler is rounded and wrinkly, the border being smooth and flattened; and the nostrils are elevated, cylindrical, and projecting from the head. In both, the feet have three claws on each. Cartilaginous Tortoise.

ART. XVI. *COMMON LAND TORTOISE* *.

THIS is the most common species of tortoise in the temperate regions of Europe, particularly in Greece: From this latter circumstance, M. Daubenton and M. de la Cepede have been induced to give it the name of La Grecque, or the Grecian tortoise; but, as it is equally common in many other countries, the more Common Land Tortoise.

 usual

* La Grecque, Encycl. Meth.—Tortuga de Garriga, in Languedoc.—Χελωνη, Χερσαια, in Greek.—Ifikame, Sanki, in Japanese.

Testudo graeca: Having the toes scarcely distinct; the buckler being very protuberant on the hinder part of the back, and its border very thick, with flattish smooth plates. Syst. Nat. ed. Gm. i. 1043. G. 119. sp. 10. Schneid. Schildkr. n. 16.—T. terrestris vulgaris. Ray, synopf. anim. 243.

Common Land Tortoiſe

uſual Engliſh appellation is here retained. This ſpecies is found in the woods and on dry land, and is ſo well known as to have become notorious for flowneſs, both in ancient and modern times; being, as ſuch, employed in illuſtration, in the arguments of philoſophy, in the ſimilies of poetry, and even in the proverbial ſayings of the vulgar. It is one of the floweſt known quadrupeds, taking a very long time to walk even a very ſmall diſtance; yet the motions of ſome of its members, as the head, the tail, and even the feet, except in walking, are tolerably lively. The flowneſs of its motions, in walking, ſeems occaſioned principally by the poſition of the legs, which are thrown very much to the ſides of the body, and are greatly ſpread out from each other; it may likewiſe be, in ſome degree, cauſed by the great weight of the buckler, and other large unwieldy parts of its body, in proportion to the weakneſs and unfavourable poſture of the legs. Its blood is equally warm with that of ſeveral other oviparous quadrupeds, which are able to run up the higheſt trees

with

with great agility; and, though its toes are not separated, like those of swift lizards, they are by no means so constructed, to appearance, as to render walking uneasy or difficult. Common Land Tortoise.

The common land tortoise resembles the fresh water tortoises in many respects. Their size varies considerably, according to age, and to the different countries which they inhabit. In general, it appears that those which are found in mountainous districts, are larger than such as inhabit the plains. The living specimen, from which the following description was taken, measuring along the curvature of the buckler, was nearly fourteen inches long, by almost ten inches broad, and four inches and a quarter in perpendicular thickness. The head was one inch ten lines long, by one inch two lines broad, and an inch thick, its upper part being flattened, and somewhat triangular. The eyes are furnished with the membrana nictitans, the lower eye-lid only being moveable. Pliny has taken notice of this last circumstance, and has mis-

Common Land Tortoise.

takenly attributed it likewise to crocodiles, and to all oviparous quadrupeds. The jaws are very strong, and indented at their edges, their inner surfaces being fluted or ridged; which circumstance has occasioned some writers to assert that they were furnished with teeth. The auditory passages are covered over by the skin of the head. The tail is very short, hardly measuring two inches in our specimen. The fore legs measured three inches and a half long, to the extremity of the claws, and the hind legs two inches and a half. The head, legs, feet, and tail, are covered by a rough-grained brown skin, garnished with hard unequal scales; some of these, towards the extremities of the paws, being of such size, so much detached at their outer ends, and so sharp, as to be readily mistaken, at first sight, for claws. The feet are scarcely distinguishable from the legs; and the toes are so much united and covered by the common scaly membrane, as only to be apparent from the claws at their extremities. Linnaeus has described these feet improperly,

as

as ſubdigitated, when in reality they have no apparent toes *. Common Land Tortoiſe.

The claws in this ſpecies are uſually more blunted than thoſe of freſh water tortoiſes, in conſequence of being more worn by more conſtant uſe, and by more ſevere preſſure, in walking on the dry ground. In walking, the claws of the fore feet are rubbed ſeparately, and one after the other, againſt the ground; when one of the feet is placed on the ground, the inner claw is firſt reſted on, and ſo on ſucceſſively to the outermoſt. The foot in this manner acts ſomewhat like a wheel, as if the tortoiſe wiſhed ſcarcely to raiſe its feet from the earth, and endeavoured to advance by means of a ſucceſſion of partial ſteps of its toes or claws, on purpoſe

* The term uſed by Linnaeus is intended to diſtinguiſh the feet of this and ſome other ſpecies, under the name of *ſubdigitated*, from thoſe in which the toes are perfectly diſtinct without webs, which he calls *digitated*; from thoſe again which have diſtinct toes united by a web, called *palmated*; and from the ſea tortoiſes, which have fins rather than toes, the feet of which are called *pinniform*.—T.

Common Land Tortoiſe.

poſe the more firmly to ſupport the great weight of its body and ſhell.

Thirteen plates, which are ſlightly ſtriated round their edges, cover the middle of the buckler; and its border is covered by twenty-four plates, all of which, particularly the hinder ones, are conſiderably larger in proportion than in moſt of the other ſpecies of the genus. By the manner in which theſe plates on the border are ſituated, reſpecting each other, they give an indented appearance to the edge of the buckler. The breaſtplate is uſually covered by twelve or thirteen plates: In the ſpecimen, from which this account was formed, there were thirteen. The plates of the buckler are brown, of various degrees of darkneſs in different individuals, marbled with whitiſh.

The buckler is very much protuberant on the back, by which form this ſpecies is enabled to recover its procumbent poſture when turned over on its back, and does not remain, like the green tortoiſe, a prey to its enemies. In the action of turning over, from lying on its back, it does not depend

altogether

altogether on the assistance of the feet, which it cannot extend sufficiently to get hold of the ground; it employs, at the same time, the head and neck, stretching them out so as to lift it from the ground, and balancing itself from side to side, until it discovers on which side the ground is lowest, and most favourable for its purpose; it then makes all its efforts on that side only, till it gets far enough over to take hold of the earth with its feet. It is said *, that the male and female of this species may be distinguished from each other by the form of the breastplate, which is almost entirely flat in the female, and somewhat concave in the male. Common Land Tortoise.

The weight of the bodies of the sea and fresh water tortoises, in proportion to the strength of their legs and feet, is greatly diminished by means of the fluid which they inhabit; as it is well known, that every body immersed in a fluid, loses so much of its weight as is exactly equal to the quantity of water it displaces. The land tortoises,

* Cetti, Hist. Nat. Amphib. et Pisc. Sard. p. 10.

Common Land Tortoiſe.

tortoiſes, however, enjoy no ſuch advantage, but are obliged to ſupport the whole undiminiſhed weight of their cumbrous bodies. There is an other proof of their ſtrength, in the facility with which they cruſh very hard bodies between their jaws. The jaws are moved by means of muſcles of ſuch force and activity, that more than half an hour after the head is cut off, they will ſometimes gnaſh them together with conſiderable noiſe. Even in the time of Ariſtotle, the tortoiſe was conſidered as having more force in its jaws, in proportion, than any other animal.

The following is an account of the principal reſults of a ſet of experiments, made in Tuſcany by F. Redi, on the remarkable difficulty that occurs in our attempts to deprive oviparous quadrupeds of life *. At the beginning of the month of November, he made a large opening in the ſkull of a common land tortoiſe, and removed the whole ſubſtance of the brain, cleaning out the cavity with great care. The eyes of the

* Obſervaz. di Fran. Redi, int. anim. viv. p. 126.

the tortoiſe were inſtantly ſhut, and never afterwards opened; but, being ſet at liberty, the animal continued to walk about, as well as before the brain was taken away: It advanced indeed in a boggling manner, as if groping its way, which it could now no longer ſee. In three days the wound was covered with new ſkin, and the tortoiſe lived, and continued all its ordinary motions, till the middle of May, nearly ſix months after it had been deprived of its brain. After death only a ſmall black clot of dry blood was found in the cavity, from which the brain had been taken out. He repeated this experiment on ſeveral tortoiſes, both land, freſh water, and even ſea ſpecies, and they all continued to live, for longer or ſhorter times, after loſing their brain. He cut of the head of a land tortoiſe, and, even after all the blood, which could eſcape from the veſſels of the neck, was diſcharged, it continued alive for ſeveral days, as could be diſtinctly obſerved by the motions of the feet. He afterwards decapitated four tortoiſes, and, having opened them twelve

Common Land Tortoiſe.

Common Land Tortoiſe.

twelve days after that operation, he found all their hearts continue to palpitate, receiving and diſcharging the remaining blood as uſual, which proved their continuance in life. Theſe experiments, which have been ſince ſucceſsfully repeated by ſeveral naturaliſts, are a ſtrong corroboration of what has been before advanced, in the preliminary diſcourſe on the general nature of oviparous quadrupeds.

The common land tortoiſe feeds on various herbs, fruits, worms, ſnails, and inſects; but it never attacks warm blooded animals, nor deſtroys fiſh, like the mud tortoiſe of the rivers and marſhes, into which the land tortoiſe never goes. Its manners are extremely gentle, and are as peaceable as its motions are ſlow; hence it is eaſily domeſticated, and is an agreeable object in gardens, where it deſtroys noxious vermin. In defect of proper food, it may be ſupplied with bran or meal.

Like all other tortoiſes and oviparous quadrupeds, it can ſubſiſt a very long time without

without food. Gerard Blaſius * kept one by him for ten months, during which time it neither eat nor drank. It died at the end of that period, but ſolely on account of the exceſſive cold of the ſeaſon; for, on opening, the inteſtines were found filled with excrementitious matter, partly black, part green, and part yellow. Common Land Tortoiſe.

In common with the other ſpecies of the genus, this lives very long. M. Cetti has ſeen one in Sardinia, which had lived ſixty years in one houſe, where it was conſidered as an old domeſtic †. In moderately high latitudes, it paſſes the winter in ſubterraneous holes, ſometimes of its own digging; being leſs or more in the ſtate of hibernation or torpor, according to the ſeverity of the ſeaſon. Even in Sardinia, it takes to an under ground habitation about the end of November ‡. It leaves its retreat in ſpring, and copulates ſooner or later after that period according to the temperature

* Obſ. Anatom. p. 64.

† Hiſt. Nat. Amph. & Piſc. Sard. p. 64.

‡ Id. ibid.

Common Land Tortoise.

perature of the country or ſeaſon. Many fables are reported * concerning the vaſt eagerneſs of the males, and the timidity of the females, &c. The only truth on this ſubject is, that the male of this ſpecies has a very large ſexual organ, and has probably a proportional ardour for propagation. It has even been reported, that, in Africa, where this ſpecies is very numerous, the males often fight for the excluſive poſſeſſion of the females; and that in theſe combats, animated by the moſt forcible of all paſſions, they advance boldly, though ſlowly, againſt each other, and fight by butting violently with their heads †, ſo as even to be heard at ſome diſtance.

The time of laying their eggs varies according to the heat of the countries they inhabit: In Sardinia, it is towards the end of June. Theſe eggs are uſually four or five in number, being white, and much like the eggs of pigeons: They are depoſited by the female in a hole, which ſhe digs with her fore

* Vid. Conrad Geſner.

† Syſt. Nat. Lin. in loco.

fore paws, in ſome dry ſpot expoſed to the ſun, and ſhe covers them over with earth. The heat of the ſun hatches them about the beginning of September, when the young ones come out of the eggs about the ſize of walnuts *. Common Land Tortoiſe.

Though this ſpecies hardly ever goes into the water, its internal ſtructure is exactly comformable to that of the ſea tortoiſes; ſo that, even though it is not amphibious in its habits, it is ſo in organization to a certain degree. Gerard Blaſius, on diſſecting a land tortoiſe, found its pericardium filled with limpid water †: And we ſhall have occaſion, in the article on the crocodile, to remark that Sloan obſerved the ſame circumſtance on diſſecting an aligator.

The common land tortoiſe is found in almoſt all the warm and temperate regions of the Old World: In Southern Europe, Macedonia, Greece, Amboina, Ceylon, India, Japan ‡, the iſle of Bourbon §, the iſ-

* Cetti, Hiſt. Nat. Amphib. &c. Sard. p. 10.

† Obſ. Anat. p. 63.

‡ Hiſt. Gen. des Voy. xl. 382.

§ Land tortoiſes were formerly very numerous in the iſle

Common Land Tortoiſe.

land of Aſcenſion, and in the deſerts of Africa. Thoſe which are found in Libia and India, are reckoned more delicious and more wholeſome as food than any other tortoiſes; and we cannot conceive why the Turks and modern Greeks ſhould be forbidden this excellent food.

Farther obſervations are yet neceſſary to aſcertain, whether the land tortoiſes of South America are the ſame, or different from this common ſpecies; and whether they are indigenous to the country, or have been carried there from ſome part of the ancient world. 'One kind of land-tortoiſe, called '*Sabutis* in the Braſilian language, is pre-'ferred, by the inhabitants of Para, to all 'the reſt. They all live out of the water 'for ſeveral months every year, during 'which time they take no food*'. In South America, where land tortoiſes of ſome kinds are

iſle of Bourbon; but have of late been ſo much deſtroyed by mariners that they are hardly now to be found, except in the weſt part of the iſland, and even there the inhabitants are not allowed to kill them, except during lent. Voy. de Barbinais le Gentil, round the world,

* Hiſt. Gen. des Voy. liii. 438.

Common Land Tortoiſe.

are very common, they are hunted in a particular manner, by means of dogs that are properly trained to the ſport. They are followed by the tract of their feet; and when the dogs come up with them, they continue barking till their maſters come to the ſpot. The tortoiſes are then taken alive, being generally five or ſix pounds weight or more, and are kept till wanted, either in gardens or proper incloſures, where they are fed with vegetables or fruits, and they often multiply exceedingly in this ſtate of confinement. The fleſh of theſe South American tortoiſes, though rather tough, is tolerably good eating.

Theſe young tortoiſes grow for ſeven or eight years: The females produce by the time they have reached half their ordinary full ſize; but the males never engender till they are almoſt at their perfect growth. From this circumſtance M. de la Borde concludes, that the females are more ardent than the males, which is contradictory to the opinion of the antients, reſpecting the great ardor of male tortoiſes, and the ex-

Common Land Tortoiſe.

ceſſive reluctancy of the females. It appears that the common land tortoiſe, at leaſt with ſome ſlight variety, perhaps occaſioned by cauſes dependent on the difference of climate, is found in North America, and the neighbouring iſlands.

The ſize of this ſpecies, in the temperate countries of Europe, is conſiderably leſs than that which it often reaches in the warm regions of India. One, which had been brought from Coromandel, meaſured four feet and a half, from the muzzle to the tip of the tail, and was fourteen inches thick. The head was ſeven inches long, by five in width, and the brain and cerebellum were only ſixteen lines long and nine lines broad. The tongue was one inch long, by four lines broad, and one line in thickneſs. The buckler was three feet long, by two feet broad. This tortoiſe was male: The breaſtplate was concave, which has been already mentioned as a diſtinction of the ſex; the ſexual organ was nine inches long, by an inch and a half in diameter, and was contained in the

rectum;

rectum; the urinary bladder was of aſtoniſhing ſize, and contained twelve pounds of clear limpid urine. Common Land Tortoiſe.

The tail of this individual was fourteen inches long, and ſix inches in diameter at the root, and, after the death of the animal, it became ſo extremely ſtiff that it could not be bent; from which circumſtance we may conclude, that it might have been employed as an offenſive weapon, with which the tortoiſe could give ſevere blows. At the tip it was armed with a hard pointed ſubſtance like horn, conſiderably reſembling that which has been already deſcribed, on the tail of the ſcorpion tortoiſe. Thus, we find that the large land tortoiſes are provided with offenſive weapons of conſiderable power, beſides their almoſt impenetrable defenſive armour: They have hard cutting jaws, and may uſe their feet and tail as arms of offence; but, as they never abuſe theſe inſtruments, and ſeem only to employ them as additional means of defence, theſe do not at all contradict, or rather they are additional confirmations of

Common Land Tortoiſe.

our former account, of the gentleneſs of diſpoſition, and tranquil manners, of the common land tortoiſe.

In the Royal Cabinet, there are ſpecimens of two common land tortoiſes of conſiderable ſize, the buckler of the one being nearly two feet five inches in length, and that of the other two feet four: On the tip of the tail, in the former of theſe, there is a calloſity ſimilar to that on the Coromandel tortoiſe. We muſt not, however, conclude that this calloſity, or horny tip, excluſively belongs to large individuals of the ſpecies; for we have ſeen a ſimilar ſubſtance on the tail of a living individual, which was very nearly of the ſame ſize with the one from which the deſcription at the beginning of this article was drawn up. As, however, this laſt individual differed from the common land tortoiſe, in the plates being of a tolerably bright greeniſh colour, and as no particular account of its hiſtory could be procured, it might probably have belonged to a diſtinct permanent variety, in which the tail becomes armed

armed with its callosity at an earlier age than in the ordinary land tortoise *. In the Royal Cabinet, there is the head of a land tortoise, brought from the island of Diego Rodriguez, which measures almost five inches long. Common Land Tortoise.

I have received from M. Arthaud, perpetual secretary of the Philadelphes, a large land tortoise from St. Domingo, which is entirely similar to the common land tortoise already described, except that most of the scales on the head, legs, and tail, are bright red.

* On this subject M. de la Cepede refers to Schneiders work on tortoises, p. 348. Dr Gmelin, however, places the individual there referred to as a distinct species, and, in the fresh water division of the genus, under the name of T. Hermanni: Having four claws on each foot, and a claw at the tip of the tail. He describes it as six inches long; the buckler being convex, and variegated with black and yellow; having twenty-four plates round the border, the two hindmost of which are protuberant; and the feet are clumsy, with no distinction of toes, like those of an elephant.—T.

ART. XVII. *GEOMETRICAL TORTOISE* *.

Geometrical Tortoise.

THIS elegant land tortoise has many circumstances of agreement with the common land species: Its toes are united together, in a similar manner, by a skin, which is covered with small scales, so as not to be distinguishable from each other, forming a thick clumsy paw; and the tips of the toes are only indicated by means of the claws. Each fore foot has five claws, and each hind foot four. The under side of the paws are covered with scales of considerable size, as well as the upper side; and

* La Geometrique. Encycl. Method.

Testudo Geometrica: Having an oval protuberant buckler; all the plates of which are elevated, and ornamented with yellow radiating streaks, meeting towards the apex, which is smooth. Syst. Nat. ed. Gm. i. 1044. G. 119. sp. 13. Schneid. Schildkr. 352. n. 13. Mus. ad. frid. i. 50.

T. picta, s. stellata. Worm. Mus. 317.—T. tessellata major. Grew, Mus. 36. t. 30. f. 1. 2.—T. minor amboinensis. Seba, Mus. 1. t. 80. f. 83.—T. tessellata minor. Ray. Synops. 259.

Archer Sculp.

The Geometrical Tortoise.

and as theſe ſcales are only attached to the ſkin at their roots, and are thick and ſomewhat rounded at the tips, they are readily miſtaken at firſt ſight for additional claws, fixed in various parts of the ſkin. Geometrical Tortoiſe.

The individual, from which the preſent deſcription was formed, meaſured ten inches long by eight inches broad, and almoſt four inches in perpendicular thickneſs. The buckler of this ſpecies is remarkably convex and protuberant; and is elegantly variegated with very beautiful colours. The plates which cover the middle of the buckler, uſually thirteen in number, are very protuberant in the middle, and are ſeparated from each other by furrows of ſome depth: The five which form the middle row are hexagonal, and thoſe of the two lateral rows have five ſides: The middle projecting part of each is ſmooth, of a yellow colour, and has ſomewhat of the regular form of the plate: The ſides of each plate ſlope downwards from this projection, to the furrows which ſeparate it from the adjoining plates, theſe ſides are deeply ſtriated parallel to the ſeparating furrows, and

are

Geometrical Tortoiſe.

are elegantly marked with yellow ſtripes, which radiate from the center of each plate; thus forming a net-work of diſtinct yellow lines on a general black ground, having a kind of regular geometrical appearance, from which the name of the ſpecies is derived. The border of the buckler is covered by twenty-three plates, ſo diſpoſed as to make the edges indented, like the teeth of a ſaw; theſe plates are black and ſtriated, and are elegantly marked with yellow ſtripes, in regular angular forms. The breaſtplate is covered by twelve plates, which are likewiſe ſomewhat emboſſed in the middle.

There are ſeveral varieties of this ſpecies, which differ from the one now deſcribed, in the number and diſpoſition of the yellow rays on the plates; in the greater or leſſer elevation of the boſſes on the middle of theſe; in the greater or leſſer uniformity of the yellowneſs of the breaſtplate; and in the degrees of elevation of the plates which cover the breaſtplate. It is uncertain whether theſe differences form conſtant

varieties,

varieties, or whether they only depend on difference in age, ſex, climate, &c. Geometrical Tortoiſe.

This ſpecies is found in Aſia, at Madagaſcar, in the iſland of Aſcenſion, and at the Cape of Good Hope. M. Bruyere, of the Montpellier Society, informs us, that the female lays from twelve to fifteen eggs every year. The land tortoiſe, named Hecate by Brown *, is probably a variety of this ſpecies. According to that author, it is a native of the continent of South America, but is very common in Jamaica, to which it is frequently brought from the Continent. Its buckler is very thick, and is often eighteen inches in length; its ſurface being divided into oblong hexagons, yellow at the center, from which ſlight lines radiate to the circumference. The terrapin of Dampier ſeems the ſame with this hecate of Brown, and with our geometrical tortoiſe; and the hecate of Dampier is probably the ſame with what Brown calls the terrapin. The tortoiſe which Dampier calls the terrapin, is conſiderably ſmaller than

* Nat. Hiſt. of Jamaica, 466. n. 5.

Geometrical Tortoiſe.

than his hecate, and has the back more protuberant; though, in other reſpects, the two kinds are a good deal ſimilar. He deſcribes the buckler as being naturally carved. It frequents wet marſhy places in the foreſts, and is very common in the iſle of Pines, between the coaſt of America and the iſland of Cuba. The tortoiſe hunters, after having caught them in the woods, carry them to their huts, where each hunter marks his own, and permits them to go at liberty; and they are ſo ſlow in their motions, that, after a whole month employed in hunting, each man is ſure to find his own tortoiſes near at hand; they are then gathered, and carried over to Cuba *.

The natural hiſtory of tortoiſes is ſtill very imperfect, and needs a great number of obſervations to render it complete: All that we have been able to attempt in this work is to indicate the circumſtances that are neceſſary to complete it, and the manner in which theſe require to be aſcertained,

* Deſcrip. of New Spain, in Hiſt. Gen. des Voy. part iii. liv. 5.

ed, giving ſome fixed points, around which theſe may be arranged when diſcovered. Geometrical Tortoiſe.

ART. XIX. *THE ROUGH TORTOISE* *.

ACCORDING to Seba †, this ſpecies only frequents the dry land. The muzzle is pointed. The buckler is nearly as broad as it is long; its edges, both before and at the ſides, being ſmooth, but they are ſlightly notched or indented behind. The whole plates of the buckler are ſmooth, except thoſe on the back, which are rough and warty, and are raiſed into a longitudinal ridge. The colour of theſe plates is whitiſh, croſſed in ſeveral directions by narrow Rough Tortoiſe.

* La Raboteuſe. Encyclop. Method.

Teſtudo ſcabra: Having an oval convex buckler, highly ridged along the middle, which is rough; the head being ſmooth and variegated. Syſt. Nat. ed. Gmel. i. 1040. G. 119. ſp. 6. Gronov. Zooph. 74.

T. verrucoſa. Walbaum, Chelenogr. 116.

† M. de la Cepede quotes the T. minor amboinenſis of Seba, as ſynonimous with this ſpecies. By Gmelin, it is conſidered as a ſynonime of the geometrical ſpecies. —T.

Rough Tortoiſe.

narrow blackiſh ſtreaks, giving a marbled appearance. The breaſtplate is waved at the fore part, and is ſlightly concave in the middle. The individual from which the deſcription was drawn, meaſured nearly three inches long, from the tip of the tail to the point of the muzzle, by ſcarcely two inches broad; and Seba ſays the ſpecies is never larger.

In this ſpecies each fore foot has five claws, and each of the hind feet four, the fifth toe on the hind feet having no claw. The tail is ſhort. The head, feet, and tail, are nearly of the ſame yellowiſh white with the buckler, variegated with brown ſtreaks and ſpots, which are larger in ſome places, eſpecially on the head, than on the buckler. This ſpecies is found in India, particularly Amboina, and is likewiſe met with in Carolina.

ART.

ART. XX. *THE SERRATED TORTOISE* *.

Serrated Tortoiſe.

THIS ſpecies is only known by the deſcription of Linnaeus. The toes, of which there are five on each fore foot, and four behind, are not ſeparated, but are united by the ſkin into a rounded paw, as in ſeveral other tortoiſes. The buckler is ſomewhat heart ſhaped, being from one to two inches in diameter; and its edges are ſerrated, or as if torn. The plates which cover the buckler are hexagonal, rough, and of a dirty whitiſh colour. The tail is ſhorter than the feet. It is found in Virginia, and was deſcribed by Linnaeus from a ſpecimen in the collection of M. de Geer.

ART.

* La Dentelée. Encycl. Method.

Teſtudo denticulata: Having a round heart-ſhaped buckler, ſerrated at the edges; the feet being ſcarcely digitated. Syſt. Nat. ed. Gm. i. 1043. G. 119. ſp. 9. Schneid. Schildkr. n. 17.

Gmelin likewiſe quotes, though with a mark of doubt, the T. ſignata of Walbaum, Chelenogr. p. 120. as a variety of this ſpecies.—T.

ART. XXI. *THE HUNCHED TORTOISE* *.

Hunched Tortoiſe.

ACCORDING to Linnaeus, this ſpecies inhabits the hotter regions of the earth, and is confined to the dry land. Its toes are diſtinct, and not united by any web or membrane. The buckler is hunched or protuberant, and the four foremoſt plates on the back are elevated into a ridge. The breaſtplate has no indentations at the edges. We have ſeen the buckler and breaſtplate of an individual of this ſpecies, in the collection of the Chevalier de la Marck, which meaſured ſix inches long, by ſix inches and a half wide, and two inches ſeven lines in depth or thickneſs. The middle of the buckler was covered by thirteen ſlightly ſtriated plates, the borders by twenty-five,

* La Bombée. Encycl. Method.

Teſtudo carinata: Having a hunched buckler, the four foremoſt plates of the back being ridged, and the breaſtplate whole at the edges; with diſtinct toes. Syſt. Nat. ed. Gm. i. 1043. G. 119. ſp. 12. Schneid. Schildkr. n. 18.

ty-five, and the breaſtplate by twelve. The buckler was of a greeniſh brown colour, ſtreaked in every direction with yellow. Hunched Tortoiſe.

ART. XXII. *THE BOX TORTOISE* *.

THIS ſpecies inhabits North America, and was firſt deſcribed by Bloch, in the Natural Hiſtory Memoirs of Berlin for the year 1786; and the information in this article was communicated by a letter to M. de la Cepede, from M. Camper, member of the States General of the United Provinces. It meaſures four inches and a quarter long, by three inches wide. The middle Box Tortoiſe.

* La Tortue à Boite.

Teſtudo clauſa: Having the buckler protuberant and ridged; the breaſtplate being hardly notched at its edges, and having two moveable pieces, which ſhut againſt the ends of the buckler. Syſt. Nat. ed. Gm. i. 1042. G. 119. ſp. 25.

Doſenſchildkroete. Bloch, Schrift. der Berl. Naturf. viii. 131. t. 1.

Box Tortoise.

middle of the buckler is covered by thirteen plates, in three longitudinal rows, of which ſix are in the middle row, and four in each of the ſide rows. The border of the buckler is covered by twenty-five plates. The buckler is much hunched or protuberant, as is the caſe in moſt of the land tortoiſes, and is notched in the middle of its fore part, to allow ſufficient motion to the head, and has two notches in its hinder part, to facilitate the motion of the legs.

The breaſtplate has no notches; but it has a kind of moveable lid before, and another behind, which play on a cartilaginous hinge, covered by a very elaſtic ſkin. Theſe are ſo placed as to admit of being opened and ſhut at the pleaſure of the animal, ſo as entirely to ſhut in the head, feet, and tail, when theſe are retired, by applying accurately to the edges of the buckler. The tortoiſe is then as if ſhut up in a *box*, from which circumſtance the trivial name is given by M. Bloch. The fore lid is ſmaller than the hinder one. The buckler is variegated with brown and yellow; and the breaſtplate

breaſtplate is pale yellow, ſpotted with black. Both in colours and form, this ſpecies has conſiderable reſemblance to the hunched tortoiſe. Box Tortoiſe.

Gmelin, in his edition of the Linnaean Syſtema Naturae, ſubjoins another ſpecies, under the name of the Penſylvanian Tortoiſe *, which he ſuſpects may be the ſame with the box tortoiſe. It has five claws on each fore foot, and four on each behind, and is placed in the diviſion of freſh water tortoiſes, having webbed feet. The tail is ſhort, and is armed with a ſharp horny point, and is employed to ſtop the motion of the animal on the declivity of hills, or of clay banks. It inhabits the ſtagnant waters of Penſylvania.

* Teſtudo Penſylvanica: Having five toes before, and four behind; the tail being tipped with a ſharp horn. Syſt. Nat. ed. Gm. i. 1042. G. 119. ſp. 26. Seligman, av. viii. t. 77.

ART. III. *THE DWARF TORTOISE* *.

Dwarf Tortoiſe.

THIS ſpecies is found at the Cape of Good Hope. A living ſpecimen was ſold to Wormius, who kept it for ſome time in his garden, as having been brought from India, where perhaps it may likewiſe be found. The buckler of this beautiful little ſpecies is ſcarcely four fingers breadth in length. The plates are elegantly variegated with black, white, purple, greeniſh, and

* La Vermillon. La Bande-blanche. Encycl. Meth.

Teſtudo puſilla: Having a hemiſpherical buckler, with convex trapeziform plates; the middle being dotted, and the rim ſtriated; the toes being ſcarcely diſtinct. Syſt. Nat. ed. Gm. i. 1044. G. 119. ſp. 14. Hagſtroem. Nov. Act. Stock. 1784. i. n. 6. p. 46. Worm. Muſ. 313. Schneid. Schildkr. n. 15.—T. Virginea. Grew, Muſ. 38. t. 3. p. 2.

African land tortoiſe. Ed. Av. t. 204. Ray, Synopſ. 259.

The trivial name of Vermillon, taken from the colour of a protuberance on the top of the head, is changed in the tranſlation, to accommodate with the Syſtema Naturae.—T.

and yellow; and, when theſe fall off, the ſurface of the buckler underneath is blackiſh yellow. The breaſtplate is whitiſh. On the top of the head, which is compared to the head of a parroquet, there is a protuberance, of a vermillion colour, mixed with yellow; from which the trivial name, in the original French of this work, is derived. The feet have each four claws, and are covered with very hard ſcales; the thighs being covered by a thick ſkin, reſembling leather. The tail is very ſhort and ſlender. Dwarf Tortoiſe.

Though this ſpecies is cloathed in gay and beautiful colouring, it is ſo ſmall as hardly to derive any advantage from the defence afforded by its armour, as we may probably apply to it what has been related by Kolben *, reſpecting the land tortoiſe of the Cape. According to that author, the large ſea eagles, called Oſpreys, being very fond of the fleſh of this tortoiſe, yet unable to break through its hard covering with all the power of their bills and talons, carry it aloft into the air, and allow it to

* Voy. to the Cape of Good Hope, ii. 198.

Dwarf Tortoiſe.

fall repeatedly on the rocks, on purpoſe to daſh its ſhell in pieces. The ſame contrivance has been, in all ages of the world, attributed to the eagles of Europe, on purpoſe to enable them to devour the common land tortoiſe: And the death of the famous poet Eſchylus, by means of a tortoiſe let fall from a great height on his bald head *, by an eagle, is well known.

The dwarf tortoiſe is not confined to the neighbourhood of the Cape, but appears likewiſe to be found in the northern parts of Africa. Mr Edwards has deſcribed an individual of the ſpecies, which was ſent from Sancta Cruz, in Weſtern Barbary.

ART. XXIV. *THE CAROLINA TORTOISE* †.

Carolina Tortoiſe.

THIS tortoiſe is found in Carolina, and is conſidered by Linnaeus as holding a kind of middle rank between the freſh water

* Conrad. Geſner, de Quad. Ovip. lib. ii.

† La Courte-queue. Encycl. Method.

Teſtudo Carolina: Having a protuberant buckler, diſtinct

water and land tortoiſes, the feet rather reſembling the former. The head and feet are covered by hard ſcales, which reſemble callous knobs. The toes are united, each fore foot having five, and each hind foot four claws. One of its diſtinguiſhing marks is the extreme ſhortneſs of the tail; but it is not altogether wanting, as is ſaid by Linnaeus. The buckler is hollowed out on the edge forwards, in form of a creſcent, the reſt of its edges being without indentations. The plates, with which the buckler is covered, are large, pointed in the middle, and ſtriated round their edges. This ſpecies ſometimes grows to a conſiderable ſize. The buckler, of a ſpecimen in the Royal Cabinet, meaſures ten inches and a half long, by eight inches ten lines in breadth. Carolina Tortoiſe.

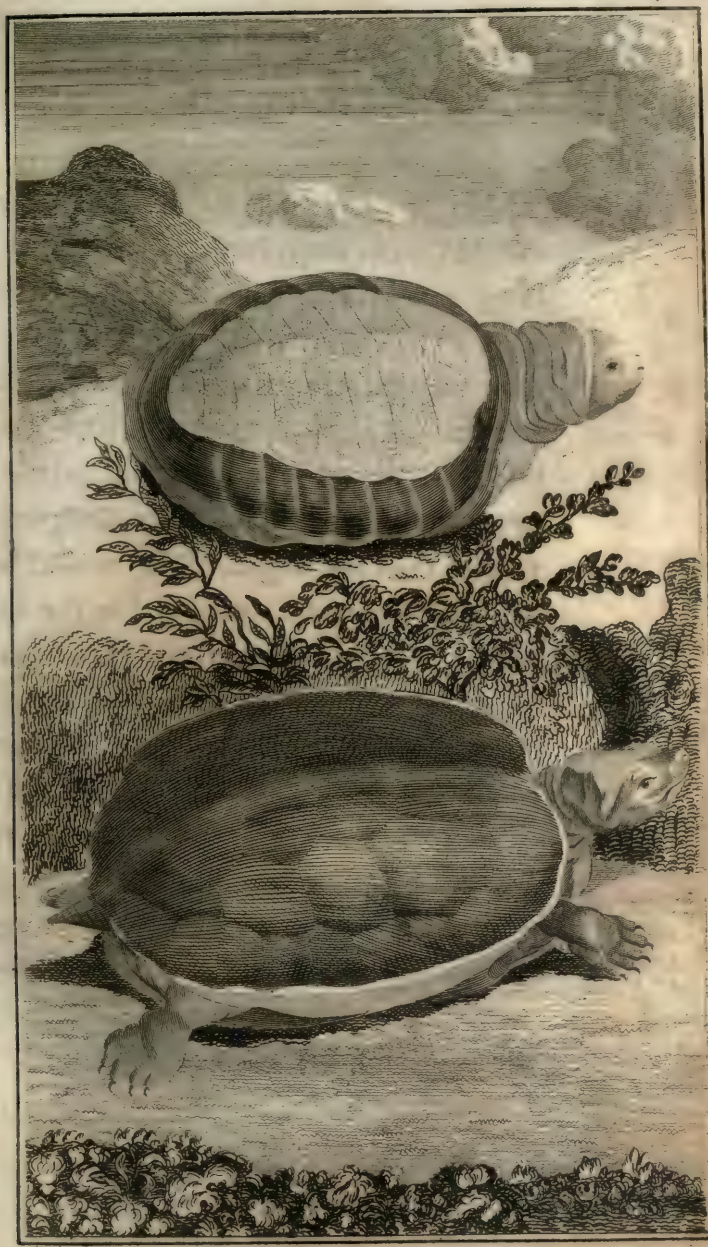
tinct toes, and no tail. Syſt. Nat. ed. Gm. i. 1041. G. 119. ſp. 11. Schneid. Schildkr. n. 7. Gronov. Zooph. 17. n. 77. Ed. Av. 205. Seb. Muſ. i. t. 80. p. 1.

ART. XXV. *THE CHAGREEN TORTOISE* *.

Chagreen Tortoiſe.

THIS new ſpecies of tortoiſe was brought from India to the Royal Cabinet by M. Sonnerat. The ſtructure of its buckler is very ſingular, and does not reſemble that of any other tortoiſe hitherto known. It ſeems compoſed of two diſtinct bucklers, placed one over the other, the uppermoſt being conſiderably narrower and ſhorter than the other. The under buckler, which may be conſidered as the rim or border, is three inches and three quarters long, by three inches and a half broad: It is cartilaginous, and almoſt tranſparent, leaving the ribs of the animal very diſtinctly projecting along its ſurface, to the number of eight on each ſide. The upper buckler is two inches eight lines long, by two inches wide; it is of a bony ſubſtance, without any plates of tortoiſe-ſhell, the middle being ſomewhat elevated into a kind of ridge;

* La Chagrinée.



1. Chagreen Tortoise. 2. Carolina Tortoise.

ridge; and its ſurface is entirely covered with ſmall pointed projections, from whence the trivial name is derived. This upper buckler is compoſed of twenty-three diſtinct diviſions or pieces. One large piece forms the fore part, neareſt the head; ſix ſmaller pieces form the middle row, along the ridge of the back; and the two ſide rows are each formed by eight pieces, which are larger than thoſe of the middle row. Chagreen Tortoiſe.

The breaſtplate extends farther, both behind and before, than the under buckler, being ſlightly notched on the fore part. It is cartilaginous, tranſparent, and partly covered by ſeven plates of bone, which are of various ſhapes and ſizes. Three of theſe are placed on the fore part, two towards the middle, and two towards the hinder part of the breaſtplate; and theſe are all chagreened, like the plates on the upper buckler.

The head of this ſpecies reſembles, in general, thoſe of the freſh water tortoiſes; and the numerous folds of ſkin round the neck, ſhows that it can be projected at pleaſure

Chagreen Tortoiſe.

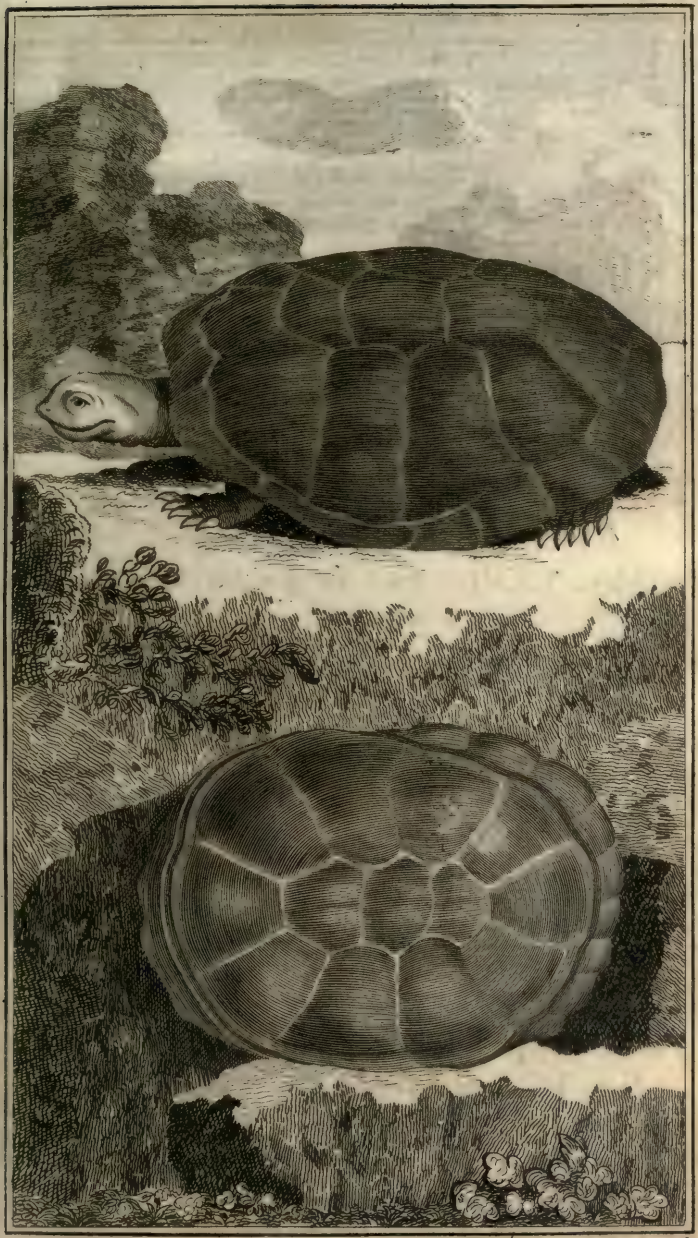
pleaſure to a conſiderable length. As nothing is known of the manners of this tortoiſe, and as the legs and tail were wanting in the ſpecimen from which this deſcription is made, it remains for after obſervation to determine whether it frequents the land or the freſh water: But, as its buckler is very little protuberant, there is reaſon to preſume that it ſhould rather be conſidered as a freſh water ſpecies.

ART. XXVI. *THE BROWN TORTOISE* *.

Brown Tortoiſe.

THIS is likewiſe a new ſpecies of tortoiſe, which was brought from India by M. Sonnerat to the Royal Cabinet, along with the chagreen tortoiſe. The buckler, which is flattened, meaſures five inches and a half long, and nearly as much in breadth; its middle having thirteen plates, and the rim twelve. Theſe plates are thin, ſmooth at their middles, and ſlightly ſtriated at the edges, being of a reddiſh or cheſnut brown colour,

* La Rouſſatre.



1. Brown Tortoise. 2. Blackish Tortoise. Archer Sculp.t

colour, from which the trivial name here adopted is derived. The breaſtplate, which is notched behind, is covered by thirteen plates. The head is flatter than in moſt tortoiſes. All the feet have five toes each, which are furniſhed with long ſharp claws. In the ſpecimen brought over by M. Sonnerat, there was no tail. Though we had no opportunity of judging, from the form of that particular part; yet, from the flatneſs of the buckler, and the claws not being worn, there is reaſon to preſume, that it ought rather to be conſidered as a freſh water than a land ſpecies. The individual which we ſaw was female, and accordingly her breaſtplate was flat. Several eggs were found in her inſide, which were ſoft, of an oval form, and about an inch long. Brown Tortoiſe.

ART. XXVII. *THE BLACKISH TORTOISE**.

OF this ſpecies, which has not been hitherto deſcribed by any naturaliſt, we can give but a very imperfect deſcription, Blackiſh Tortoiſe.

* La Noiratre.

Blackiſh Tortoiſe.

tion, as only its buckler and breaſtplate are preſerved in the Royal Cabinet. We are, at the ſame time, ignorant both of its habits, whether it frequents the land * or the freſh water, and of its country, as no notices on either of theſe ſubjects are to be found in the regiſters of the Cabinet.

The buckler is five inches four lines in length, and nearly of an equal breadth, being ſomewhat protuberant, and of a very deep blackiſh brown colour. The middle is covered by thirteen thick plates, which are ſtriated at their edges, and ſo ſmooth on all the reſt of their ſurface, as even to feel oiled or greaſy to the touch. The five plates of the middle row are raiſed into a longitudinal ridge. The rim of the buckler is covered by twenty-four plates. The breaſtplate is notched, or hollowed out, at its hinder part, and is covered by thirteen plates.

OF

* From the convexity of the buckler, as repreſented in the figure, it is probably a land tortoiſe.—T.

OF LIZARDS IN GENERAL.

Lizards in general.

THIS is the moſt numerous genus in the order of oviparous quadrupeds. After the moſt attentive conſideration, both of our own obſervations, and thoſe of naturaliſts and voyagers, and the ſtricteſt compariſon of the various ſpecimens we could procure, we have thought it requiſite to enumerate fifty-ſix known ſpecies, which are diſtinguiſhed from each other, by natural habits, and external characters. The animals of this genus are eaſily diſtinguiſhed from all other oviparous quadrupeds, as they have no bucklers, like the former genus, and are all furniſhed with tails, which are entirely wanting in frogs and toads. Their bodies are either covered with ſcales, of more or leſs ſtrength, or with tubercles, of greater or leſſer projection. Their length varies, in the different ſpecies, from two or three inches, to twenty-ſix or even thirty feet. Their tails differ from each

Lizards in general.

each other, both in general form, and in proportion to the ſize of the body; being flat in ſome ſpecies, and rounded in others; in ſome ſpecies it is three times as long as the body, while in others it is very ſhort; in all the ſpecies it is extended horizontally backwards, and is almoſt as thick at the baſe as the hinder part of the body from which it ariſes.

In general the hind legs are longer than the fore. Some ſpecies have five toes on all the feet, while others have only four or three on the fore feet, or only on the hind feet. In moſt of the ſpecies, the five toes of the hind feet are of unequal lengths; the third and fourth being longer than the reſt, and the outer toe is ſeparated from the others, ſo as to form a kind of thumb, while, in all the viviparous quadrupeds, the toe which ſerves this purpoſe is the inmoſt. The phalanges, or moveable pieces, of the toes, in this genus, are not confined to three for the fingers and two for the thumbs, as in viviparous quadrupeds, but ſometimes extend to four, as in ſome ſpecies of birds, which

which gives greater facility for graſping the branches of trees in climbing. Lizards in general.

The different ſpecies of this genus differ from each other in habits, as much as in external form. Some live almoſt entirely in the water, or on the ſequeſtered banks of great rivers and marſhes. Some, inſtead of avoiding the habitations of mankind, ſeem to prefer theſe to all other places. Some live in the woods, and run with great ſwiftneſs along even the higheſt and moſt ſlender branches of trees. Some even have a kind of membranous expanſions, in form of wings, by means of which they can leap to very conſiderable diſtances, ſupported in the air by the reſiſtance of theſe membranes; thus uniting a ſpecies of flight, to the faculties of ſwimming in water, and of climbing on the branches of trees.

As this genus includes ſo great a number of ſpecies, it was thought neceſſary to reduce them into ſome methodic arrangement, uniting together ſuch as reſemble each other in ſize, external form, and general habits.

Lizards in general.

bits. For this purpoſe, the genus is here arranged into eight diviſions.

In the firſt diviſion, which contains eleven ſpecies, we comprehend the crocodile, and other lizards, which have their tails ſomewhat flattened, all of them growing to the length of ſeveral feet.

The ſecond, containing five ſpecies, conſiſts of the Guana, and other ſmaller lizards, though ſome of them are ſometimes four or five feet long; theſe are diſtinguiſhed from the reſt, by having the ſcales on the middle of the back raiſed into a ſerrated ridge.

The third diviſion includes the grey lizard, a very common European ſpecies, the green lizard, which is found very abundantly in the ſouth of Europe, and five other ſpecies: Theſe are diſtinguiſhed from all the other ſpecies, by having no ſerrated ridge on the back, by having round tails, and by the under part of their bodies being covered with ſcales of a conſiderable ſize, diſpoſed in tranſverſe bands.

The

Lizards in general.

The fourth diviſion, which contains twenty-one ſpecies, has no ſerrated ridge on the back, and wants the tranſverſe bands of the preceding diviſion, while the tail is ſimilarly rounded. The cameleon and the ſcink, improperly called the land crocodile, are two principal ſpecies in this diviſion.

In the fifth diviſion, the under ſurfaces of the toes of which are covered by large imbricated ſcales, the gecko and two other ſpecies are placed.

The ſixth contains the ſeps and one other ſpecies, which have only three toes on each foot, both before and behind.

The ſeventh diviſion, or of lizards having membranes reſembling wings, contains only one ſpecies, under which we have comprehended all that has been related by voyagers reſpecting winged lizards.

The eight diviſion, which contains ſix ſpecies of lizards, is diſtinguiſhed from the reſt, by having three or four toes on each fore foot, and four or five toes on each hind foot. To theſe lizards the name of ſalamander ought excluſively to belong, which has been often given to other ſpecies

Lizards in general.

both very different from thoſe of this diviſion, and even from each other. Theſe ſpecies have very great analogy with frogs, and other oviparous quadrupeds without tails: They reſemble theſe in wanting apparent ſcales on their bodies, in their habits, in the metamorphoſes which they all undergo before acquiring their full growth, and in living leſs or more in the water. They likewiſe reſemble theſe tailleſs oviparous quadrupeds in their internal ſtructure, and in the form and number of their bones. Though, like other lizards, they have vertebrae of the neck, they have hardly any ribs, as in frogs. They thus form the link of connection, between the oviparous quadrupeds having tails, and thoſe which have none.

Moſt of the lizard tribe have only two or four vertebrae of the neck; but the crocodile, which, from its power and ſize, ſtands at the head of all theſe animals, has ſeven, like all viviparous quadrupeds. Thus that ſpecies may be conſidered as connecting lizards with the ſuperior orders of viviparous

viparous quadrupeds, while, by its habits and ſtructure, it connects them with the tortoiſes; the ſalamander, on the contrary, placed at the oppoſite extremity of this part of the ſcale of being, unites the genus with a lower order of oviparous quadrupeds, and aſſiſts to form and ſupport the wonderous chain of animated nature.

Lizards in general.

I. DIVISION.

OF LIZARDS,

Having the tail ſomewhat flattened, with five toes on each fore foot.

OF THE CROCODILE IN GENERAL.

Crocodile in general.

IN comparing the various relations of Travellers, the obſervations of Naturaliſts, and the deſcriptions of Syſtematiſts, on purpoſe to determine whether we ſhould admit of ſeveral ſpecies of crocodiles, or whether the differences, that have been obſerved in various individuals, ought merely to be attributed to age, ſex, or climate, we find many contradictions with reſpect to the figure, colour, ſize, manners, and habitation, of this gigantic oviparous quadruped.

ped. Some voyagers have attributed to the crocodile circumſtances which belong entirely to other large lizards, of very different ſpecies, and have given the ſame names to both, though differing eſſentially both in habits and form. Some * have aſſured us, that the crocodile is called, in ſome parts of the world, the Ligan, or Guan, which are in reality only contractions of the Iguane, or Guana. From theſe differences in name, figure, and manners, they have been inclined to conſider the crocodile as forming ſeveral diſtinct ſpecies.

Crocodile in general.

The real crocodiles have five toes on each fore foot, and four webbed toes on each hind foot, and have claws only on the three inner toes of all the feet, both behind and before. After examining all the great ſpecies of lizards, by this particular character, and attentively obſerving the differences of the ſeveral individuals, both ſuch as we have ſeen perſonally, and ſuch as have been accurately deſcribed by authors and travellers worthy of credit, we find it neceſſary

* Hiſt. Gen. des. Voyages, liv. vii.

Crocodile in general.

to admit three diſtinct ſpecies. The firſt, which is the common and proper crocodile of the Nile, which is likewiſe called the alligator on the coaſt of Africa, may be named the green crocodile. The ſecond is the black crocodile, ſeen by M. Adanſon on the banks of the river Senegal. The third inhabits the Ganges, and is there called the Gavial, which name may very properly be retained. Theſe three ſpecies reſemble each other, in the characters, which have been previouſly ſtated as diſtinctive of crocodile; but they differ eſſentially in other reſpects, which ſhall be mentioned in their particular articles.

The crocodile of America has been called *Cayman* *, a name borrowed from the Indians. After examining very carefully ſeveral individuals of different ages, and comparing them with others from the Nile, we are convinced that they are abſolutely of the ſame ſpecies, and that any ſlight

* The Engliſh ſettlers in America, generally call them Alligators; which name is adopted in the Syſtema Naturæ.—T.

Crocodile in general.

ſlight differences, there may exiſt between them, are entirely owing to the influence of climate. Though the jaws of theſe American ſpecimens are ſometimes rather ſhorter than in thoſe of the Nile, this circumſtance is certainly not ſufficient to conſtitute a diſtinct ſpecies, particularly as it is ſubject to conſiderable variation; and the American and Nilotic crocodiles reſemble each other in the number and arrangement of their teeth, as much as the crocodiles of the Nile reſemble each other. It has been alledged, that the American crocodiles emitted a fainter cry, were leſs courageous, and of ſmaller ſize, than thoſe of Egypt: But this is only true of the individuals in certain parts of America; for the voice in thoſe of Louiſiana is a kind of bellow, at leaſt as loud as in the crocodiles of the Old World; and the former ſometimes exceed the latter, both in ſize and courage. While, on the other hand, we find that, in ſome parts of the Old World, the crocodiles are almoſt altogether ſilent,

Crocodile in general.

and are of as timid and gentle manners, at leaſt, as thoſe of Guiana.

Hence we may conclude, that the crocodiles of the Nile and of America, form only one ſpecies; which is ſubject to variation, as to ſize and habits, in both continents, according to the influence of climate, food, greater or leſs humidity of the ſoil, &c. This firſt and largeſt ſpecies of lizard, is then common to both continents; while the black crocodile has only been ſeen hitherto on the weſtern coaſt of Africa, and the Gavial only on the banks of the Ganges.

Some of the voyagers, who have been on the eaſtern coaſt of South America, mention a large lizard, which they conſider as a ſmall alligator, or cayman, though very diſtinct from the ordinary ſpecies of that animal. This pretended cayman, or alligator, is in reality a large lizard of the ſpecies here named dragon*, which is ſometimes

* Lacerta Dracaena, of Linnæus. In the original French, the only diſtinction made between this ſpecies and

times five or ſix feet long. This opinion has been confirmed by the information of a very acute obſerver from Guiana, who, on being ſhown the dragon, immediately recogniſed it for the lizard, called in that country the ſmall alligator or ſmall cayman. Crocodile in general.

Dampier, likewiſe, is inclined to conſider certain large lizards of New Spain and other countries of America, as forming a new ſpecies of crocodile *, to which the Spaniards in theſe countries have given the name of cayman, as well as to the real crocodiles. But it is more probable that theſe large lizards, to which that celebrated navigator gives the name of crocodile or cayman, are of the ſpecies which is called whip-tail in this work. In reality, according to Dampier's account, they have the diſtinctive character of that ſpecies; for, in running, they carry the tail turned up in an arched form at the tip, while the real

and the Lacerta Volans, is in ſpelling; the former being called Dragonne, and the latter Dragon.

* Dampier, Voy. iii. 287.

Crocodile in general.

rèal crocodiles always rather trail their tails on the ground, ſtraight out behind. Beſides, the true crocodiles are all provided with four glandular bodies, from which a muſky adour is ſecreted; while, according to Dampiers own account, theſe large lizards, which he wiſhes to conſider as crocodiles, have no ſuch organ, and are, therefore, to be excluded from forming a fourth ſpecies of crocodile.

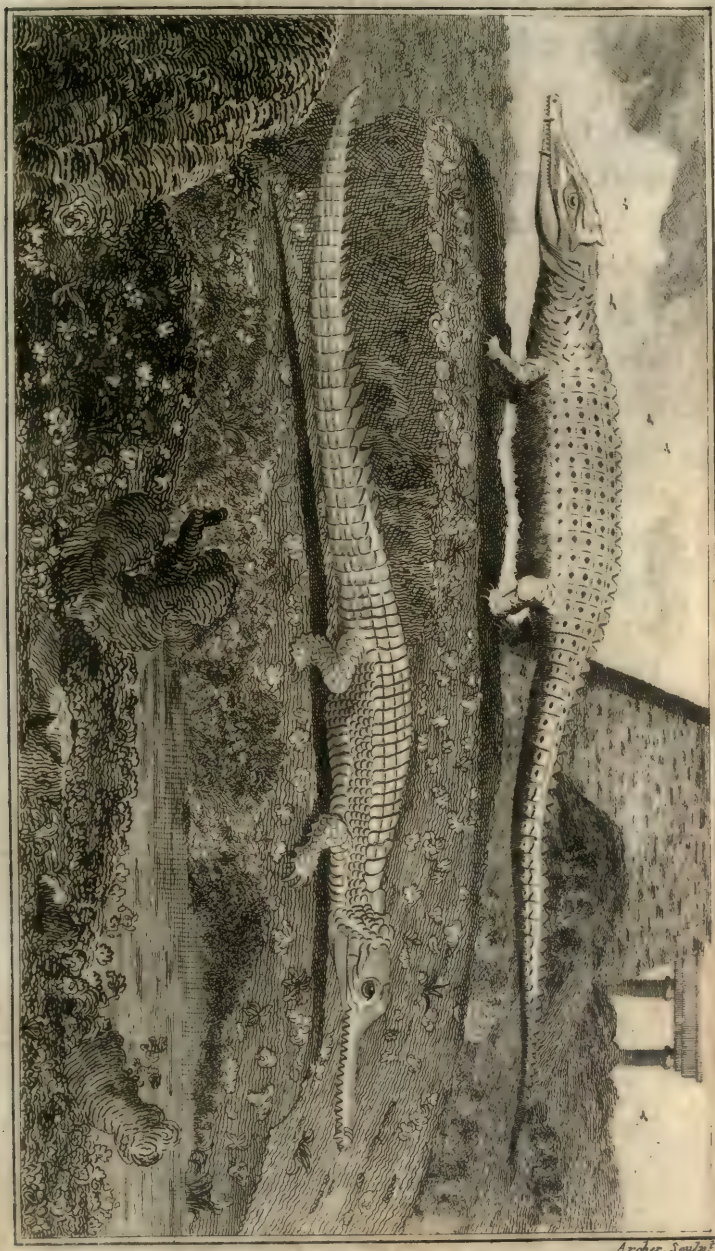
We now proceed to examine more particularly, the three ſpecies which ſeem excluſively intitled to be conſidered as belonging to the gigantic ſpecies of lizards, beginning with that which inhabits the banks of the Nile, and has been longeſt known.

ART. I. *THE NILOTIC CROCODILE* *.

Nilotic Crocodile.

NATURE, in appointing the eagle to the dominion of the air, and the lion

* Le Crocodile proprement dit. Called Alligator, on



1. Nilotic Crocodile. 2. Gavial, *p. 296.*

lion as the ſovereign of the immenſe deſerts of the Torrid Zone, has committed the government of the ſhores of the ſeas and of the large rivers between the tropics to the

Nilotic Crocodile.

on the coaſt of Africa; Cayman, in America; Diaſik, by the negroes of Senegal; Takaie, in Siam; Lagartor, by the Portugueſe in India; Jacane, in Braſil; Kimbuta, in Ceylon; Champſan, in Egypt; Kimſak, in ſome parts of Turkey; Crocodilus, in Latin; Κροκοδειλος, or Νειλοκροκοδειλος, in Greek; the Leviathan, of the Scriptures, according to Scheuchzer, in his Natural Hiſtory of the book of Job.

Lacerta Crocodilus; having the head armed, the neck ridged, and the tail furniſhed with two rows of ſtrong ſerrated ſcales on its upper ſide. Syſt. Nat. ed. Gm. i. 1057. G. 122. ſp. 1. Gronov. Muſ. n. 47. Bellon. aquat. 41. Geſn. quad. 9. aquat. 304. Aldrov. aq. 677. Jonſt. quad. t. 79. f. 3. Olear. Muſ. t. 7. f. 3. Seb. Muſ. t. 105. f. 3. 4. Valliſn. Nat. i. t. 43. Haſſelqu. it. 292.

Crocodilus Niloticus. Beſl. Muſ. 47. t. 13. Jacob. Muſ. i. t. 7. f. 55.—Lacertus Maximus. Ray. quad. 261.—Crocodilus Cayman *. Bont. Jav. t. 55.—Crocodilus,

* Gmelin conſiders this American Crocodile as a different ſpecies, under the name of L. Alligator; ſaying that its head is covered with imbricated ſcales, and its neck naked or without a ſerrated ridge.—T.

Nilotic Crocodile.

the crocodile. Living, as it were, on the confines, between the land and the water, this enormous animal extends his dominion equally over the inhabitants of the ſeas and rivers, and of the dry land. Being vaſtly ſuperior, in ſize and ſtrength, to all the animals of this order, it is not obliged to admit any participation, either in power or in ſubſiſtance, as the eagle with the vulture, or the lion with the tiger. It, therefore, enjoys more abſolute rule, than either the king of the foreſt or the ſovereign of the ſkies; and its dominion is ſo much the more durable, that, belonging equally to both elements, it can more readily

codilus Niloticus, Americanus, Africanus, Terreſtris *. Laurent amphib. 53. 54.—Crocodilus. Brown. Jam. 461. Barrere, fr. equin. 152. Job Ludolph, commentar. Proſp. alpin. i. ch. 5.

* M. de la Cepede ſuppoſes that Laurenti has been deceived in making four ſpecies of Crocodiles, by truſting to Seba. Gmelin refers the C. Niloticus, and C. Africanus, to this ſpecies, as diſtinct varieties; the C. Americanus to his L. Alligator; and the C. Terreſtris, to the Gavial or Gangetic Crocodile, his L. Gangetica. —T.

ly eſcape from ſnares and dangers; having much leſs warmth of blood, it has the leſs need for recruiting its powers by food, as theſe are more ſlowly exhauſted; and, being able much longer to ſuffer the want of nouriſhment, it is much ſeldomer expoſed to the danger of combating for food. Nilotic Crocodile.

The crocodile greatly exceeds both the eagle and the lion, theſe fierce ſovereigns of the air and of the land, in length of body; and, if we except a few very large viviparous quadrupeds, as the elephant, hippopotamus, &c. and ſome enormous ſerpents, on which nature ſeems to have been prodigal in her diſtribution of matter, the crocodile would remain the largeſt of animals, were it not for the enormous cetaceous fiſhes, which are concealed in the boſom of the ocean. It is worthy of remark, that, in proportion as they are deſtined for flying through the air, for rapid motion on the ſurface of the earth, or for cutting their courſe through the waters, animals ſeem endowed with greater ſize. The eagle and the vulture are far from equaling

Nilotic Crocodile.

qualing the ſize of the lion, the tiger, or the camel. In proportion as the land animals approach the banks of the ſea and of the great rivers, their dimenſions ſeem to be increaſed, as in the elephant and hippopotamus; yet moſt of the large viviparous quadrupeds are exceeded in bulk by crocodiles that have attained their fulleſt ſize. From theſe conſiderations, we are led to ſuſpect, that it might have been difficult for nature to have given ſufficiently powerful organs to the larger animals, for tranſporting them through ſo rare a medium as the air, or even for ſupporting them in walking on the earth; and that ſhe has, therefore, been conſtrained, in ſome degree, only to grant a gigantic ſize to ſuch animals as were deſtined to live in water, which, while it is ſufficiently fluid to yield to all their motions, has ſo much gravity as greatly to aſſiſt in ſupporting their enormous weight. Thus, the art of mankind, which is only exerted in applying natural powers, is forced to follow a ſimilar courſe; we can only cauſe very limited maſſes of

matter

matter to move on the ſurface of the earth, and can only raiſe bodies of much ſmaller ſize into the atmoſphere, while we are able to direct the motion of moſt enormous machines on the ocean. Nilotic Crocodile.

As, however, the crocodile is only found in very warm climates, while, on the contrary, whales, and other very large animals of that claſs, prefer a polar reſidence, the crocodile yields in ſize only to a ſmall number of thoſe animals which inhabit the ſame regions with itſelf. Hence, the exerciſe of its dominion, over the other oviparous quadrupeds, is for the moſt part attended with very little exertion; as, incapable of violent appetites, it is never actuated by ferocity *. Though it lives by prey, and devours other animals, even ſometimes attacking mankind, this inſtinct is never exerted, as has been alledged of the tiger, for ſatisfying an appetite for cruelty, or for miniſtering to an unquenchable thirſt of blood, but ſolely to ſatisfy the moſt neceſſitous wants, which are indiſpenſable

* This obſervation occurred even to Ariſtotle.

Nilotic Crocodile.

penſable for ſupporting a very conſiderable body. The crocodile, like the lion and the eagle, ſupports the dignity of its rule, with clemency; and like them its power is not combined with cruelty and rapine, but is exerted merely for ſupplying its moſt urgent neceſſities. The whale, the chief of the cetaceous tribe, with which we have compared the crocodile, in the ſame manner only deſtroys on purpoſe to preſerve its own exiſtence, and to enable it to reproduce its kind: Thus we find, the four governing animals, of the waters, of the ſhores, of the deſarts, and of the air, all unite, with a vaſt ſuperiority of power over their inferior animals, a conſiderable gentleneſs of diſpoſition, leaving unneceſſary cruelty to inferior and ſubaltern tyrants.

The crocodile, in its general form, is extremely ſimilar to the other lizards, but has a number of diſtinctive characters peculiar to itſelf. The head is long, flattened, and much wrinkled; the muzzle being thick, and ſomewhat rounded: On the upper part

of

Nilotic Crocodile.

of the muzzle, there is a round, blackiſh, ſoft, and ſpungy ſubſtance, in which the noſtrils are placed; which are of a creſcent figure, having the points turned backwards. The mouth is enormouſly large, opening even behind the ears, the jaws being ſometimes ſeveral feet in length: The lower jaw is perfectly ſtraight on both ſides; but the upper jaw is waved in its direction, and is much enlarged at its poſterior extremity, ſo as to overlap the under jaw on each ſide; it becomes narrower at the ſides, and is in its turn overlapped by the under jaw, almoſt to the muzzle, where it again enlarges, and overlaps the under jaw. From this circumſtance, the teeth that are ſituated at theſe overlapping places, have the appearance of tuſks or canine teeth; ſuch as the ten teeth in the front part of the upper jaw. On the other hand, the two foremoſt teeth of the lower jaw, when the mouth is ſhut, not only penetrate into the upper jaw, but even proceed quite through it, and appear on the outſide like two ſmall horns. This circumſtance is very evident, in all

Nilotic Crocodile.

the individuals of any conſiderable ſize, that we have examined; and is even perceptible in a young ſpecimen from Senegal, only four feet four inches long, that is preſerved in the Royal Cabinet. Notwithſtanding the diſtinctneſs of this remarkable character, it has not been hitherto noticed by any naturaliſt, except by the Jeſuit mathematicians, who were ſent into the eaſt by Louis XIV. and who ſent home the deſcription of a crocodile from Siam *.

There are ſometimes as far as thirty-ſix teeth in the upper, and thirty in the lower jaw; but the number is ſubject to variety. The teeth are of different lengths †, very ſtrong, ſomewhat hollowed, ſtriated on their lateral ſurfaces, of a conical form, and ſharp pointed; they are firmly fixed in the jaws, by means of ſtrong roots, forming a ſingle row on each ſide of each jaw, and are ſomewhat bent or hooked backwards, eſpecially thoſe that are neareſt the muzzle. They are

* Mem. for Nat. Hiſt. of Anim. iii.

† The longeſt are called canine teeth by Pliny. Hiſt. Nat. lib. xi. ch. 61.

Nilotic Crocodile.

are ſo ſituated in the two jaws, relatively to each other, that they paſs between each other, when the mouth is ſhut; and, in this ſituation, the points of ſeveral of the lower teeth are received into hollows in the upper gums, and of ſeveral of the upper teeth into ſimilar hollows in the gums of the lower jaw. The gentlemen of the academy, who diſſected a very young crocodile in 1681, having drawn out ſeveral of its teeth, found others of a very ſmall ſize in the bottoms of the ſockets *; hence it appears, that the firſt ſet of teeth muſt fall out, and be replaced by a new ſet, in the ſame manner with the inciſive teeth of mankind, and of many viviparous quadrupeds.

Notwithſtanding that ſeveral authors have inſiſted, that the upper jaw † in crocodiles is moveable, it only needs a ſingle glance at the ſkeleton to be convinced that, as in all quadrupeds, the upper jaw is entirely fixed, and the motion is confined to the under jaw. In moſt viviparous quadrupeds,

* Mem. for Nat. Hiſt. of Anim. iii.

† Labat, ii. 344. Ray, Synopſ. 262.

Nilotic Crocodile.

beſides the direct vertical motion of opening and ſhutting the mouth, the lower jaw has a lateral motion from ſide to ſide, for the purpoſe of grinding or chewing the food. This motion is denied to the crocodile; which is only very imperfectly able to maſticate its food, becauſe the teeth are ſo placed as not to meet, or oppoſe each other: But they are excellently calculated for keeping a faſt hold of their prey, and for tearing it to pieces; after which it is moſtly ſwallowed without chewing, and without being mixed with ſaliva: It is, however, very readily digeſted, in conſequence of the crocodile having a larger proportion of bile and gaſtric juice than any other animal *. In theſe reſpects, the crocodile has conſiderable reſemblance to the claſs of fiſhes; and the teeth in ſeveral ſpecies of ſharks, reſemble thoſe of the crocodile, both in figure and arrangement.

The ancients †, and even ſome modern authors ‡, have ſuppoſed that the crocodile had

* Haſſelquiſt, Voy. to Paleſtine. 346.

† Plin. Hiſt. Nat. lib. xi. ch. 65.

‡ Nat. Hiſt. of Jamaica. 461.

Nilotic Crocodile.

had no tongue: But its tongue is in reality very large, even larger in proportion than that of an ox; it is, however, ſo firmly attached to the two ſides of the lower jaw, by means of a membrane, that it cannot be thruſt out of the mouth. Through this membrane ſeveral ducts of ſecretory glands open into the mouth *.

The crocodile has no lips; ſo that, even when walking or ſwimming with the utmoſt tranquillity, the teeth are bare, and the aſpect ſeems animated with rage. Another circumſtance, that contributes to increaſe the terrific nature of its countenance, is the fiery appearance of the eyes; which, being placed obliquely and very near each other, have a malignant aſpect: Theſe are furniſhed with two hard moveable †, and very much wrinkled, eyelids; over which is an indented rim, reſembling an eyebrow drawn together into a menacing frown. This general aſpect of malignity and hideouſneſs,

* Mem. for Nat. Hiſt. of Anim. iii.

† Pliny has miſtakenly aſſerted, that the lower eyelid only was moveable in the crocodile.

Exotic Crocodile.

has certainly contributed greatly to produce a reputation for insatiable cruelty, which some voyagers have attributed to this animal. The eyes, as in those of birds, are defended by a membrana nictitans, which adds considerably to their power *.

The ears are placed very near to, and somewhat higher than, the eyes, and are covered by a skin, which is cracked and elevated in such a manner as to resemble shut eyelids: From which circumstance, some naturalists have been induced to believe that the crocodile had no external ears, especially as these passages are very obvious in many other species of lizards. The upper portion of this skin, which covers the passage, is moveable, and, when lifted up, the tympanum, or drum of the ear, can be distinctly seen. Some voyagers seem to have been deceived, by this resemblance of the skin covering the ears to eyelids, and have reported that crocodiles had been killed which had four eyes †.

Notwithstanding

* Brown, Jamaica. 461.

† Hist. des Moluques. ii. 116.

Notwithſtanding the ſlight projection of theſe ears, we are informed by Herodotus, that the ancient inhabitants of Memphis hung pendants to the ears of the ſacred crocodiles which were kept at that city. Nilotic Crocodile.

The brain is extremely ſmall *. The tail is very long, and is as thick at the root as the body, of which it ſeems only to be a prolongation: In its figure, it is flattened laterally, having ſome reſemblance to an oar, and, by its means, the crocodile manages itſelf when ſwimming in the water with great eaſe, and is enabled to ſwim with great ſwiftneſs. Beſides this inſtrument, the toes of the hind feet are united by webs, ſo that they can be employed as fins to aſſiſt in ſwimming. Of theſe toes, which are four in number on each hind foot, and five on each fore foot, only the three innermoſt on each foot are provided with claws, which are uſually an inch or two in length.

Crocodiles are naturally defended by almoſt impenetrable armour: Their whole

* Mem. for Nat. Hiſt. of Anim. iii.

Nilotic Crocodile.

body is covered by ſtrong hard ſcales, except the top of the head, where the ſkin is fixed directly over the bones of the ſkull. The ſcales on the flanks, on the legs and feet, and on the greater part of the neck, are round, of various ſizes, and very irregularly placed: Thoſe on the back, and on the upper ſide of the tail, are ſquare, and are diſtributed in regular tranſverſe rows or belts. Hence, in our attempts to kill or wound this animal, we muſt not direct the ſtroke from behind forewards, as in thoſe animals in which the ſcales are imbricated over each other: It is neceſſary to inflict the wounds between the rows of ſcales, where nothing but ſkin occurs. According to ſeveral naturaliſts, theſe rows or belts of ſcales vary in number, in the different individuals: But we have examined with the utmoſt care, ſeven different individuals of various ſizes, both from Africa and America, and have found that theſe rows were perfectly uniform in their numbers, except in one individual. One of theſe was thirteen feet nine inches and a half

half long, from the tip of the muzzle to the tip of the tail; another meaſured nine feet; the third and fourth eight; the fifth four feet; the ſixth two feet; and the ſeventh had juſt come out of the egg; and in all, except the individual of two feet long, which had one band or row of ſcales more than the reſt, the number of theſe rows was uniformly the ſame. Nilotic Crocodile.

The ſquare ſcales are exceedingly firm and hard, and are at the ſame time ſufficiently flexible to prevent them from being brittle. Labat * ſays, that they are proof againſt a muſket ball, unleſs it is diſcharged very near, or the piece be very ſtrongly charged; and that the negroes make caps or rather helmets of the ſkin, which are ſufficiently ſtrong to defend them againſt the ſtroke of a hatchet. The hardneſs of theſe ſcales is probably in proportion to the age of each individual, and perhaps varies in the different ſexes. M. de la Borde ſays, that they are impenetrable to

* Vol. ii. p. 347. and Atkins, in Hiſt. Gen. des Voy. lib. vii.

Nilotic Crocodile.

to muſket balls, except under the ſhoulders: And, according to M. de la Coudreniere *, they may likewiſe be wounded in the belly and near the eyes. Each of theſe ſcales has a kind of creſt, or ſerrated ridge, on its middle, which adds to its ſtrength, and in general enables them to reſiſt the force of a muſket ball. Though it has been alledged, that the ſcales about the flanks have more projection and ſtronger ridges, than thoſe in the other parts of the body, we do not find that to be the caſe, on the moſt attentive obſervation of many ſpecimens. On the middle of the neck, there are two tranſverſe rows of theſe tuberculated ſcales, in the form of cocks-combs, one of which conſiſts of four and the other of two pieces. Each ſide of the upper ſurface of the tail is furniſhed with a longitudinal row of theſe creſted tubercles, which extends the whole length in a ſerrated ridge of ſharp points, that unite together into a ſingle row near the tip of the tail. The ſcales, which cover

* Obſervations on the crocodile of Louiſiana, in the Journal de Phyſique for the year 1682.

ver the belly, the under ſide of the head, neck, tail, and feet, and the inner ſide of the legs, are placed in tranſverſe rows: Theſe ſcales are ſquared and ſomewhat flexible, like thoſe on the back, but are much weaker, and have no protuberances. The cetaceous and other voracious fiſhes attack the crocodile in theſe weaker parts of the body: In this manner, as we are told by Pliny, the dolphin often kills the crocodile: And, in the furious combats that often take place between the crocodile and the ſaw-fiſh, the latter, finding it impoſſible to penetrate through the ſtrong tuberculated armour on the upper part of the body, dives below his enemy and wounds him on the belly *. Nilotic Crocodile.

The colour of the nilotic crocodile is a greeniſh yellow, leſs or more variegated with pale green in blotches and tranſverſe bars, having a general reſemblance to braſs ſlightly ruſted. The under parts of the body, tail, and feet, and the inner ſides of the legs, are yellowiſh white.

It

* Hiſt. Gen. des Voy. xxxix. 35.

Nilotic Crocodile.

It has been alledged, that the name of this animal, in Greek and Latin, from which the French and Engliſh names are directly copied, is derived from κροκος or *crocus*, ſaffron, owing to the reſemblance of its colour to that ſubſtance. Some authors, on the other hand, derive it from κροκος, ſaffron, and δειλος, affraid, pretending that it was affraid of that drug *. Ariſtotle ſeems to have conſidered the crocodile as being black: Thoſe indeed of the river Senegal are often very dark brown, verging towards black, but that ancient naturaliſt could not know any thing of the productions of that part of Africa.

In the ſkeleton of the crocodile we ſometimes find fifty-nine vertebrae, or pieces, of the ſpine; ſeven of theſe are in the neck, twelve in the back, five in the loins, two in the place of the os ſacrum, or rump, and thirty-three in the tail: The number, however, is ſubject to variety. The eſophagus, or gullet, is very large, and is capable of great diſtention. The ureters lead directly from

* Geſner, de Quad. ovip. p. 18.

Nilotic Crocodile.

from the kidneys to the rectum, without the intervention of any urinary bladder. The anus opens at the posterior and lower part of the body. The male organ is concealed within the body, except during the sexual union, which takes place by the anus, as in all the other species of lizards, and in tortoises. Two glandular bags are situated below the jaws, and two others near the anus, into which a volatile odorous substance is secreted, smelling strongly of musk.

Sloan, in his voyage to Madeira, Barbadoes, and Jamaica *, gives an account of the anatomy of a crocodile, or alligator, sixteen feet long, which we shall here abridge. 'The windpipe is bent, and divides before 'joining the lungs; these are composed of 'air vesicles and blood vessels mixed to-'gether, and form two large lobes, one 'on each side of the back bone. The 'heart is small, and the pericardium, or 'heart-purse, usually contains a large quan-'tity of water. The diaphragm, or mid-'riff,

* Vol. ii. p. 332.

Nilotic Crocodile.

'riff, is membranous, or rather it is tendi-
'nous and nervous. The liver is large,
'and of a triangular figure; having a very
'large gall bladder, which, in the indivi-
'dual under diſſection, was filled with
'clear yellow bile. It has no ſpleen. The
'kidneys are large, and are ſituated near
'the anus, one on each ſide of the back-
'bone. There is no tongue.' This is to be conſidered only as proving that the tongue is not free, as in other animals, for in reality it is proportionally large, but is tied down in the bottom of the mouth by a ſtrong membrane, and was therefore overlooked by Sloan. 'The ſtomach is large,
'and its inner coat is very ſtrong and
'tough; it contained ſeveral round poliſh-
'ed ſtones, ſimilar to the gravel on the
'ſea ſhore, and ſome fiſh bones. The
'eyes are ſpherical, with oblong pupils,
'like thoſe of cats, having a membrana
'nictitans to each.' This account of the anatomy may be compared with that given by Haſſelquiſt, in his voyage to Paleſtine.

The

Nilotic Crocodile.

The length of the crocodile varies according to its different ages, and according to the temperatures of the countries which it inhabits. It ſeldom exceeds twenty-five or twenty-ſix feet, even in the moſt favourable climates; and, in other countries, as on the coaſt of Guiana, which ſeem leſs favourable to its growth, it hardly ever grows beyond thirteen or fourteen feet long. Brown * ſays, that the crocodile of Jamaica frequently reaches from fourteen to twenty-four feet in length. Sloan † informs us, that crocodiles or alligators are very common on the coaſt and in the deep rivers of Jamaica, where the ſkin of one that had been taken, and preſented to him as a curioſity, was ninteen feet long. Brue, in the account of his voyage to Senegal ‡, relates, that about Ghiam the crocodiles are very numerous, and are more dangerous and conſiderably larger, than thoſe which frequent the mouth of the river. At this place

* Nat. Hiſt. of Jamaica. 461.

† Voyage to Madeira, &c. ii. 332.

‡ In the Hiſt. Gen. des Voyages.

Nilotic Crocodile.

place the attendants of the general killed one that measured twenty-five feet long, to the great joy of the natives, who conceived it to be the father of all the rest, and that its death would frighten all the others in the neighbourhood.

Some travellers ascribe to the crocodile a considerably greater size than has been mentioned. Barbot says, that some are found, in the rivers Senegal and Gambia, at least thirty feet long, and according to Smith, those at Sierra-leone are sometimes of that length; but, as this latter author only measured the print of one of these animals in the sand, his testimony is of little moment *. According to Catesby, in his Natural History of Carolina, the crocodiles of Jamaica, and of several parts in North America, are sometimes about twenty feet long. Gesner, who has collected all that has been written by the ancients concerning this animal, says, that some of these authors mention individuals of twenty-six

* Smith, Voy. to. Guinea; and Jobson, Voy. to the Cape, in Hist. Gen. des Voy. lib. vii.

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ty-ſix cubits in length. Haſſelquiſt, in his voyage to Paleſtine, deſcribes a female of thirty feet long.

Keeling, in his voyage to Bantam, ſays, 'that ſome of his people killed a croco-'dile, which they met walking ſlowly on 'the banks of a river, that falls into 'the bay of St Auguſtin, in Madagaſ-'car; and though it was wounded in 'many places with a number of muſket 'balls, its convulſions when dying were ex-'tremely terrifying. It meaſured ſixteen 'feet long, and the mouth ſeemed large 'enough to have ſwallowed a man at a 'morſel. He cauſed it to be brought to 'the veſſel, that the whole crew might 'enjoy the extraordinary ſight; and, when 'it was cut up, though the flavour and 'appearance of its fleſh ſeemed both ex-'cellent, yet none of his people had the 'courage to taſte it'.

The ſpecimen in the Royal Cabinet, from which our account is drawn up, meaſured almoſt fourteen feet long, and more than four feet in circumference at the thickeſt

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part of the body; from which we may conclude, that the largeſt individuals are between eight and nine feet round. The principal dimenſions of this individual were as follow:

	Feet.	Inches.	Lines.
Total length - -	13	9	6
Length of the head -	2	3	0
Ditto, from between the eyes to the tip of the noſe	1	6	6
Ditto of the upper jaw	1	10	0
Ditto of that part containing the teeth - -	1	7	0
Diſtance between the eyes	0	2	0
Diameter of each eye -	0	1	3
Circumference of the body at the thickeſt part -	4	4	6
Breadth of the head behind the eyes - -	1	1	6
Ditto of the muzzle at the narroweſt part - -	0	8	0
Length of each fore leg and foot to the tip of the toes	1	9	0
Length of each hind leg and foot to ditto - -	2	2	3

Length

Nilotic Crocodile.

	Feet.	Inches.	Lines.
Length of the tail -	6	0	3
Circumference of the tail at the root - - - -	2	10	0

The ſexual union takes place in the beginning of ſpring, the female lying on her back, as in all the lizard tribe. The duration of the union, when they appear very cloſely embraced, is not known; but, from obſervations on the lizards of Europe, though conſiderably ſhorter than in tortoiſes, it muſt be either longer or more frequent than in many of the viviparous quadrupeds; and, when finiſhed, the attention of the male ſtill continues for his mate, as he aſſiſts her to riſe.

It was long thought, that the female crocodile layed all her eggs at one time; but M. de la Borde informs us, that ſhe lays twice and ſometimes three times, with an interval of a few days, producing from twenty to twenty-four eggs each time: Hence each female may lay ſeventy-two eggs in one ſeaſon; which agrees ſo far with the aſſertion of Linnaeus, that the

Nilotic Crocodile.

number of eggs from one female in a year ſometimes amounts to a hundred. Theſe eggs are layed on the banks of the rivers, in a hole in the ſand. In Cayenne and Surinam, according to the information of M. de la Borde, the female prepares a ſmall hillock of ſand, with a hollow in the middle, which ſhe lines with leaves and other vegetable matter; then depoſites her eggs, and covers them over with leaves: The vegetable ſubſtances ferment, which produces ſome heat, that, in addition to that of the atmoſphere, hatches the eggs.

In Cayenne the crocodiles and tortoiſes lay their eggs at the ſame ſeaſon, in the month of April; but the laying ſeaſon of the former continues rather longer than the latter. It is very remarkable, that the egg of ſo large an animal, and from which an animal is produced that is to become of ſuch enormous magnitude, ſhould ſcarcely exceed the egg of a Pintado or Guinea fowl in ſize *. An egg of a crocodile of fourteen feet long, killed in upper Egypt in

* Cateſby, Nat. Hiſt. of Carolina. ii. 63.

in the act of laying, is preſerved in the Royal Cabinet: It is whitiſh, and of an oval figure, and is covered by a chalky ſhell, ſimilar to that of a hens egg, but not ſo hard, but the ſkin or film, immediately within the ſhell, is thicker and ſtronger. The long diameter is two inches five lines, and the ſhort diameter one inch eleven lines. I have ſeen ſome crocodiles eggs from America, that meaſured three inches ſeven lines one way, and two inches the other. Nilotic Crocodile.

The fetus crocodiles are rolled up, within the egg, and ſeldom exceed ſix or ſeven inches long when they break the ſhell, which they ſometimes do with the head, and at other times with the ſerrated tubercles on the back. When they firſt come forth, they drag about with them the remains of the yolk, attached to the umbilical chord, and ſurrounded by its proper membrane, together with a kind of after-burthen, in which they had been enveloped when within the ſhell. All theſe circumſtances are very diſtinctly obſervable, in the ſpeci-

Nilotic Crocodile.

men preſerved in the Royal Cabinet, which was caught immediately on breaking through the ſhell. The inſertion of the umbilical chord remains very perceptible for ſome time *, but diſappears as the animal grows older; the rows of ſcales, which were ſeparated to allow its paſſage, growing together gradually, and concealing it. A ſimilar circumſtance has been formerly noticed, in the deſcription of the round tortoiſe, in a young individual of which the breaſtplate was found divided, allowing a ſmall part of the ſkin of the belly, with the umbilical cicatrix, to appear.

From the information of travellers, we are certain that the crocodiles do not ſit upon their eggs; indeed, independent of that teſtimony, we ſhould have ſo concluded from an attentive review of the conformation and natural habits of the animal, notwithſtanding that Pliny † has reported that the male ſits on the eggs alternately with the female. If we examine the hiſtory

* Seba, Muſ. i. 162.

† Plin. Hiſt. Nat. lib. x. chap. 62.

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tory of ſuch oviparous animals as are ſuſceptible of affectionate connections, ſuch as birds, we ſhall find, that, in thoſe which are leaſt ardent in the ſexual paſſion, the male quits all ſociety with the female immediately after ſhe is fecundated: In others, that have ſtronger paſſions and attachments, the male aſſiſts the female in gathering materials, or in conſtructing the neſt, or he watches her while ſitting on the eggs, and ſeems to chear her with his ſong: In ſome ſpecies, which ſeem to feel the paſſion of love ſtill more forcibly, the male partakes equally with the female in all the cares, of building, hatching, and tending the brood. The crocodile ought, therefore, to be conſidered as very ardent, were the male to ſit on the eggs as well as the female. But how ſhould this lively, intimate, and conſtant tenderneſs be attributed to an animal, which, from the coldneſs of its blood, can never be ſuppoſed ſuſceptible either of impetuous paſſions or fixed attachments? The eggs of crocodiles are hatched ſolely by the heat of the atmoſphere, aſſiſted by a

Nilotic Crocodile.

kind of fermentation, proceeding from the vegetable matters that line the neſt in which they are depoſited. Hence the young crocodiles are totally unacquainted with their parents; but nature has endowed them with ſufficient ſtrength, both of body and inſtinct, even from their firſt appearance, to ſubſiſt without any aſſiſtance from others. M. de la Borde, however, writs, that, in Surinam, the female always keeps within a ſmall diſtance of the place where ſhe has depoſited her eggs, and even defends them with fury againſt any perſon or animal that attempts to approach them. Immediately on getting out of the eggs, they run for the water, where they are both in greater ſecurity from danger, and better ſituated to procure proper food *. Even there, however, they are by no means exempted from dangers, even of the moſt unnatural kind; they are not only preyed on by voracious fiſhes, but the old crocodiles, when preſſed by famine, often do, from urgent neceſſity, what other animals, of a more ſanguinary

* Cateſby, Nat. Hiſt. Carolina. ii. 63.

nary diſpoſition, ſeem to perpetrate merely to ſatisfy the cruelty of their diſpoſitions, they devour the helpleſs young of their own kind. Nilotic Crocodile.

The length of life in crocodiles has not yet been aſcertained by obſervation; but we have reaſon to conclude that it ought to be very conſiderable. M. de Fontange, commandant of St Domingo, having caught ſome young crocodiles juſt after they were hatched, had them properly fed, and endeavoured to bring them alive to France, but they died during the paſſage, when about twenty-ſix months old, and about twenty inches in length. If the growth proceeded always in the ſame proportion, we might calculate twenty-ſix months for every twenty inches of length in the largeſt individuals: But, as in almoſt every animal, the growth is much more rapid at firſt, than in the more advanced periods of life, we ought, perhaps, to allow conſiderably more than that period for each twenty inches. As, however, it may be alledged, that the growth of animals is retarded by confinement,

Nilotic Crocodile.

confinement, we ſhall, in the preſent caſe, only calculate on twenty-ſix months for each twenty inches in length, and on theſe data, a crocodile of twenty-five feet long muſt have required thirty-two years and a half to acquire its full ſize. This flowneſs of growth is confirmed by an obſervation of the mathematical miſſionaries, whom we have formerly mentioned as ſent into the eaſt by Louis XIV. Having kept a young crocodile alive for two months, they could not perceive that its ſize was ſenſibly increaſed during that period *. The miſtaken opinion of Ariſtotle and Pliny, that the crocodile continues to increaſe in ſize as long as it lives, probably aroſe from this very flow growth. This flowneſs of growth is a proof that the animal muſt live to a very advanced age. As it lives in the water almoſt as much as the ſea tortoiſes; as the covering of its body is by no means harder than their buckler and breaſtplate; and as it continues to grow even for a longer time than the green tortoiſe, which appears

* Mem. for a Nat. Hiſt. of Animals. iii.

pears to attain its full size in twenty years; we have reason to presume that the life of the crocodile should extend beyond that of the green tortoise, or more than a hundred years. Nilotic Crocodile.

The crocodile prefers the banks of such large rivers as, in consequence of frequent or periodical overflowing, are covered with mud, in which they find abundance of testaceous fish, worms, and frogs, for food. In South America, according to M. de la Borde, it especially frequents marshy lakes and drowned Savannas. Catesby says, that, in North America, it frequents both the salt parts of the rivers near the sea, the fresh currents above the reach of the tide, and the lakes both of salt and fresh water*. He describes the slimy banks of these rivers, within the tide, as covered by thick forests of the mangrove tree, amid which the crocodiles conceal themselves. These aquatic forests are filled with crocodiles, voracious fish, and other animals which prey on each other. The smaller crocodiles, retire into the

* Nat. Hist. of Carolina. ii. 63.

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the thickeſt covert, where the larger ones are unable to purſue them. Large tortoiſes are often found in theſe places, which are frequently preyed on by the ſharks and other fiſh; and theſe, in their turn, become the prey of the large crocodiles. The remains of this promiſcuous ſlaughter is not unfrequently ſeen floating on the water in theſe lakes and rivers. On the ſlimy banks of theſe marſhy and wooded waters, the large crocodile, covered over with mud, and appearing like the trunk of a fallen tree, often remains motionleſs for a long while, watching with aſtoniſhing patience for an opportunity to ſeize his prey. His ſtillneſs, colour, and form, impoſes on fiſhes, ſea-fowl, tortoiſes, and other animals, ſo that they approach without ſuſpicion. He likewiſe ſeizes on ſheep, goats, hogs, and even on cattle and horſes. While ſwimming along the great rivers, he ſeldom raiſes more than juſt the top of the head above water, ſo as to ſee around, ſeeking to ſurpriſe any of the larger animals that may come cloſe to either ſhore: When he ſees any one approach

proach to drink, he dives and ſwims under water, till he gets near enough to catch it by the legs, then drags it into the water till it is drowned, and devours it at his leiſure. When preſſed with hunger, the crocodile even devours mankind. Haſſelquiſt relates, that, in Upper Egypt, it very often devours the women, who come to draw water from the Nile, and the children who play about on the banks *. Some authors pretend that it attacks negroes in preference to white men †; but this probably proceeds from the much greater number of negroes than whites, in the countries where the obſervation has been made, and from the occupation of the negroes expoſing them more to the danger of being attacked. Nilotic Crocodile.

As the largeſt crocodiles have both occaſion for a greater quantity of food, and are more eaſily ſeen and avoided by ſmall animals, they muſt be expected to ſuffer the effects

* Voyage to Paleſtine, 347.

† Obſervations on the crocodile of Louiſiana, by M. de la Coudreniere, in the Journal de Phyſique for 1782.

Nilotic Crocodile.

effects of hunger more frequently, and with greater violence, than ſmaller individuals, and are conſequently much more dangerous, eſpecially in the water. In this element he enjoys the whole of his ſtrength with much greater advantage than on the land. In ſpite of his great ſize, and apparent unwieldineſs, he moves about in the water with great ſwiftneſs and agility, often emitting a kind of ſilent half ſuppreſſed murmuring noiſe. Though the great length of his body prevents him from turning ſuddenly, he ſwims forwards with aſtoniſhing velocity, when about to ſeize his prey: This he generally throws down with a ſtroke of his rugged tail, then ſeizes it in his talons, and pulls it to pieces, or cuts it in two with his ſtrong ſharp teeth, and ſwallows it down his enormous throat. When on the land, his motions are vaſtly more embarraſſed, and he is conſequently then leſs dangerous; but, though he advances much ſlower than in the water, he runs tolerably faſt when the ground is ſmooth, and his road is ſtraight forewards. Wherefore,

on

on theſe occaſions, the beſt method of eſcape is by continually turning in a ſmall circle. In the deſcription of New Spain, in the General Hiſtory of Voyages, we are told of an Engliſhman, who was purſued ſo ſwiftly by a large crocodile, which came out of Lake Nicaragua, that unleſs the Spaniards who were in his company had cried out for him to quit the ſtraight road, and run in a circle, he muſt have been caught. In South America, according to M. de la Borde, the large crocodiles come much ſeldomer on the dry land than the ſmall ones. Thoſe which inhabit the lakes, are ſometimes left dry, in conſequence of the water evaporating; and, not being able to reach any other water, they are forced to ſubſiſt by catching birds or land animals, or even to live a long while without food, and are then extremely dangerous. Nilotic Crocodile.

In thoſe places where large crocodiles are frequent, it is very dangerous for any perſon to fall into the water, as they are continually on the watch. They even frequently attempt to leap or ſcramble into boats or canoes,

Nilotic Crocodile.

canoes, during the night, and, when they ſucceed, deſtroy the ſleeping paſſengers. In the deſcription of Celebes, or Macaſſar*, we are told, that 'the crocodiles are more dangerous in the great river of Macaſſar, than in any other part of the Eaſt: They do not confine their depredations to fiſh, but ſometimes lie in wait in great multitudes at the bottom of the river, and attack ſmall boats, uſing their tails to overturn them, and then ſeize upon the men and animals, and devour them.' M. de la Borde writes from Cayenne, that he has ſeen them attempt to raiſe themſelves up againſt the ſides of ſmall boats in the river. Hence it is requiſite to be very much on the watch, when either in boats or on the ſhore, near the haunts of crocodiles.

On comparing the various relations of voyagers and travellers, it appears that the voracity and boldneſs of this animal augments, diminiſhes, or is even altogether extinguiſhed, according to climate, ſize, age, and ſituation, and eſpecially in proportion to

* Hiſt. Gen. des Voyages, xxxix. 248.

Nilotic Crocodile.

to the ſcarcity or abundance of accuſtomed food. Hunger may ſometimes compel them even to feed on each other, and then the weaker muſt neceſſarily be deſtroyed by the ſtronger. But we cannot ſuppoſe, with ſome authors, either that the female conducts her young to the water when they are hatched, or that ſhe and the male devour all thoſe that cannot run ſwiftly. We have ſeen, that the heat of the ſun and the atmoſphere ſuffice for hatching the eggs; that the young, when they come forth, find the way directly to the water by themſelves; and, as the crocodiles are never cruel, except to ſatisfy the cravings of hunger, they certainly do not merit the accuſation of ſo barbarous a repaſt.

Notwithſtanding the great variety of food which is ſought for by crocodiles, the ſlowneſs of their pace, eſpecially on the land, gives great advantage to moſt animals in eſcaping from them: Hence they are often obliged to faſt for a long while, even at times for ſome months, without any food. When in this ſituation, they often ſwallow

Nilotic Crocodile.

ſmall ſtones and bits of wood, as if to prevent their bowels from ſhutting altogether. Brown relates, that he has frequently ſeen crocodiles live ſeveral months without any food; which had been put into ponds, after having their jaws tied together with wire, and were ſeen coming frequently to the ſurface to breathe *.

According to the authority of voyagers, the crocodiles that inhabit near the line never become torpid; but thoſe which inhabit near the tropics, or in higher latitudes, retire into deep caverns near the ſhore at the approach of the cold ſeaſon, and remain torpid during winter. Pliny ſays, that the crocodile ſpends four months of winter in caves, and without food †; and, as the crocodiles of the Nile were beſt known to the ancients, we may thence conclude, that they ſuffer an annual torpor during the cold ſeaſon. In Carolina, which is in nearly the ſame latitude with Egypt, but which has a much colder winter, they remain

* Nat. Hiſt. of Jamaica, 461.

† Hiſt. Nat. lib. viii. ch. 38. and lib. xi. ch. 151.

remain torpid during the cold ſeaſon; and Cateſby relates, that they bellow horribly when they wake from their annual torpor *. The loudneſs of the noiſe, which Cateſby ſays may be heard to a great diſtance, may be occaſioned by echoes, which may augment the natural ſuppreſſed murmuring voice of this animal. M. de la Coudreniere ſays, that in Louiſiana, the voice of the crocodile is as loud as that of a bull, and is never repeated more than once at a time †. Jobſon informs us, that the crocodiles of Gambia, called *bumbos* by the negroes, cry ſo loud as to be heard at a great diſtance, and that their voice ſounds as if it came from the bottom of a pit ‡. This latter account gives reaſon to preſume, that the ſound is low, hollow, and ſuppreſſed. The authority of M. de la Borde confirms the accounts of theſe naturaliſts and voyagers.

Nilotic Crocodile.

* Nat. Hiſt. of Carolina, ii. 63.

† Obſervations on the Crocodile. Journal de Phyſique for 1782.

‡ Voyage to Gambia, in Hiſt. Gen. des Voyages, liv. vii.

Nilotic Crocodile.

Though the crocodile, like all other oviparous quadrupeds, hybernates in the higher latitudes, where any degree of winter cold is experienced, its ſcaly covering is not injured either by the cold or abſtinence, as in moſt of the other animals of the claſs: Hence it does not change its ſkin, like moſt of the lizards.

In all thoſe countries where mankind is not ſufficiently numerous to force them to live diſperſed, crocodiles are found in numerous aſſemblages. In the great river Senegal, M. Adanſon has ſeen more than two hundred ſwimming together, with their heads juſt above water, reſembling a great number of trunks of trees floating down the river. This aſſociation, however, does not take place in conſequence of any uſeful inſtinct. They do not gather together, like beavers, to perform a common labour, to which the exertion of individuals is unequal. Their talents are not perfected by imitation, nor is their ſtrength increaſed by any concerted operation. They do not aſſociate, like ſeals and other phocine animals,

in

in consequence of mutual affection. But they accidentally gather together, merely because similarity of appetite leads them, for its gratification, to the same place. Nilotic Crocodile.

This habit of living together is an additional proof, to what has been already alledged, that the character of cruelty and ferocity has been falsely attributed to this animal. That they are not naturally either fierce or cruel, is evident from their being tamed in some countries. In Bouton, one of the Molucca islands, they are sometimes kept and fattened, in a certain degree of domesticity. In some countries, they are kept for the sake of ostentation. Thus the King of Saba, on the slave coast of Africa, has always two ponds filled with crocodiles. 'In the Rio San-Domingo, likewise on the 'western coast of Africa, M. Brue was 'astonished to find the crocodiles, usually 'considered as such terrible animals, per-'fectly harmless, insomuch that the chil-'dren played with them, mounted on their 'backs, and even beat them, without dan-'ger, or any appearance of resentment.

Nilotic Crocodile.

'This gentleneſs of diſpoſition proceeds 'probably from the care which is taken by 'the natives to feed them, and to treat 'them well; for, in all other parts of Afri-'ca, they attack mankind and animals in-'diſcriminately. In ſpite of their general 'ferocity, there are many negroes bold 'enough to fight them, only armed with 'a dagger. One of the garriſon of Fort 'St Louis uſed very frequently to do this 'by way of amuſement, and was long ſuc-'ceſsful; but at laſt he was ſo ſeverely 'wounded in one of theſe combats, that, 'unleſs he had been aſſiſted by his com-'panions, he muſt have periſhed by the 'terrible teeth of one of theſe monſters *.' M. de la Borde has ſeen crocodiles in Cayenne kept in ponds, where they lived for a long time without doing any harm even to the tortoiſes which were kept in the ſame ponds, and fed along with them on the refuſe of the kitchens. The ancients were well acquainted with the means of taming crocodiles;

* Voy. to the Biſſao Iſlands, in the Hiſt. Gen. des Voyages.

crocodiles; for Ariſtotle informs us, that nothing more is neceſſary for this purpoſe than to ſupply them abundantly with food, the want of which is the only cauſe of their being dangerous. Nilotic Crocodile.

The crocodile has not the ſame cruelty of diſpoſition with the ſhark, and many other animals of prey, that live in the ſame element, and with which it has ſeveral points of reſemblance; neither has it by any means the ſame activity of courage with theſe animals, probably owing to the colder nature of its blood. Pliny relates, that it flies from purſuit, even allowing itſelf to be managed by thoſe that are hardy enough to get on its back, and is only dangerous to thoſe who run from it *. Proſper Alpinus, in his Natural Hiſtory of Egypt, ſays that the Egyptian peaſants often catch crocodiles, and, having tied their legs and mouth, carry them for ſale to the towns; they will even untie their feet, make them walk about, and tie them again before they kill them †. This gentleneſs

* Hiſt. Nat. lib. viii. chap. 38.

† Vol. i. chap. 5.

Nilotic Crocodile.

of diſpoſition may be true, with reſpect to the crocodiles of certain parts of America, which, like all the other large animals of theſe new countries, where the ſuperabundant moiſture overbalances the effects of heat, have much leſs ſtrength and courage than the ſame or ſimilar animals in the drier countries of the Old World. M. de la Borde informs us, that, in the neighbourhood of Cayenne, in South America, the negroes ſometimes catch ſmall crocodiles or caymans, of five or ſix feet long, and having tied their feet, they allow themſelves to be carried about or handled without even offering to bite. Some of the more prudent of theſe negroes, take the precaution of fixing the jaws of the crocodile together, or gag the mouth with a piece of wood. In ſome rivers of St Domingo, where the crocodiles are very gentle, when purſued by the negroes, they conceal their head and part of the body in ſome hole; the negroes then paſs a running nooſe on a ſtrong rope round one of their hind feet, and haul them out by main force, after which

which they allow themſelves to be led about, even into the houſes, without making the ſmalleſt attempt to defend themſelves. Nilotic Crocodile.

Heat is ſo neceſſary to crocodiles, that they not only ſeem to live with great difficulty in temperate countries, but are even ſmaller in proportion as the climates they inhabit are farther removed from the equator. They are met with, however, both in the Old and New Worlds ſeveral degrees to the north or ſouth of the Tropics. The rivers of Corea are much infeſted with crocodiles, which are ſaid to be ſometimes eighteen or twenty ells long *. They are likewiſe plentiful on the coaſt of New Guinea †. Dampier found ſeveral on the coaſt of the iſland of Timor. According to Cateſby ‡, there are great numbers in North America, ten degrees north from the Tropic; particularly in one of the rivers of North Carolina,

* Hiſt. Gen. des Voy. xxiv. 244.—The word *ell* muſt certainly be a miſtake for feet.—T.

† Voy. de Fernand Mendez Pinto.

‡ Nat. Hiſt. of Carolina, ii. 63.

Nilotic Crocodile.

rolina, about the thirty-ſixth degree of north latitude, which correſponds pretty nearly to the moſt northerly parts of Africa, where this animal is to be found; but he never heard of any being ſeen farther to the north. M. de la Condamine ſays, that they are very common in the whole courſe of the Amazons, and the various rivers that fall into it; and that he has ſeen ſome of twenty feet long and even more. He had formerly ſeen many in the river Guyaquil of twelve or fifteen feet in length; but thoſe of the Amazons, being leſs diſturbed, grow larger, and are leſs affraid of mankind, inſomuch that they are known ſometimes to enter the cabins of the Indians, during the ſeaſon of the inundation *.

Petrified bones of the crocodile have frequently been found buried in the earth, in different parts of Europe; particularly in the mines of Thuringia, where they have been diſcovered more than fifty feet below the ſurface; and the whole ſkeleton of

* Hiſt. Gen. des. Voyages, liii. 439.

of a crocodile was found underground in the county of Nottingham, in England *. We muſt refer to the theory of the earth, and the epochs of nature, of M. Buffon, for an examination of the connection between theſe foſſile bones, and the various revolutions which have taken place in different parts of the earth. Nilotic Crocodile.

Notwithſtanding the formidable appearance of the crocodile, the negroes, in the neighbourhood of the river Senegal, venture to attack it particularly when aſleep, endeavouring to ſurpriſe it in places where the water is not deep enough to allow it to ſwim. They approach it boldly, having the left arm defended by a covering of thick leather, and attack it with ſpears, or a kind of dart, called *Zagaye*, aiming their thruſts chiefly at the throat and the eyes. They even ſometimes force open its mouth, and, preventing it from ſhutting, by means of the zagaye placed firmly between the jaws, hold down its head in the water till it

* Bibliotheque Anglaiſe, vi. 406.

Nilotic Crocodile.

it is drowned or ſuffocated *. M. Adanſon † gives the following account of an engagement between a negro and a crocodile ſeven feet long, which the negro diſcovered ſleeping among ſome buſhes at the foot of a tree, near the banks of a river. He ſtole gently up to the animal, and gave it a deep wound with a knife, in the ſide of the neck. The crocodile, though mortally wounded, ſtruck the negro ſo violently on the legs with its tail, as to knock him down; but, without quitting his hold, he roſe inſtantly, and, wrapping a rope round the muzzle of the crocodile, while one of his companions held it faſt by the tail, and Mr Adanſon mounted on its back to hold it down, he drew out the knife from the wound and cut off its head.

In Egypt, the peaſants often dig a deep trench, in the uſual tract by which the crocodile goes from the water into the country, which they cover lightly with branches of trees and earth; then ſetting up

* Labats Voy. ii. 337.

† Voyage to Senegal, 148.

up a great noiſe to frighten the crocodile, it haſtens to the water, and falling into the pit, is there either killed or ſecured with ropes or nets. Sometimes they fix one end of a ſtrong rope to the trunk of a large tree, having a large hook at the other end, to which a living lamb is tied: This is left on the bank of the river, and by its cries to get looſe, attracts a crocodile to the ſpot; which, willing to avail itſelf of the ſuppoſed repaſt, at the ſame time gets the hook fixed in its jaws. The more the crocodile ſtruggles to get free, the more firmly the hook penetrates; the people on the ſhore, give line in proportion as the crocodile dives, and following all its motions in the water, wait till it is completely exhauſted, and then drag it to the ſhore. Nilotic Crocodile.

In Florida, the ſavages often advance in companies of ten or twelve together againſt a crocodile, carrying a thick bough of a tree, and, when the crocodile comes to attack them with its mouth wide open, they force the bough down its throat, and then ſoon put it to death. Some people are e-

ven

Nilotic Crocodile.

ven venturous enough to attack the crocodile in the water, its own proper element; they dive below its belly, which they pierce with a large knife or dagger, that being almoſt the only place in which it is vulnerable.

Mankind is not the only enemy of the crocodile, though perhaps the moſt deſtructive, for fewer crocodiles are always found in proportion to the population of their reſidence. They are likewiſe preyed on by tigers and by the hippopotamus; which latter animal is ſo much the more dangerous, that it is able to purſue the crocodile to the very bottom of the ſea or of the rivers. The cougars of America, though vaſtly weaker than the tigers, likewiſe deſtroy great numbers of crocodiles: Theſe animals lie in wait for the young crocodiles, at the edge of the great rivers, and, ſeize them immediately as they come out of the water. Sometimes, however, the cougar periſhes in the attempt, when he meets with a large crocodile; the cougar fixes his claws in the eyes of the crocodile, but,

but, not being ſtrong enough to prevent it from returning to the water, is dragged in and drowned, uſually both falling a ſacrifice to the combat *. Nilotic Crocodile.

But for theſe numerous enemies, an animal of ſuch aſtoniſhing fecundity would become too numerous: The ſhores of all the great rivers in the Torrid Zone, would become covered and infeſted, to a dangerous degree, by theſe monſtrous lizards; which, by the impoſſibility they would then experience of procuring their food readily, would become fierce, cruel, and deſtructive, in their natures. Being already very powerful, by the ſtrength of their body, and the nature both of their offenſive weapons and defenſive armour, they would then become altogether irreſiſtible by their numbers; and mankind, which has already, in ſome places, conſiderable difficulty to preſerve the empire over the earth, which he has received from nature, againſt the power of theſe monſters, would be forced to retreat from many of thoſe fruitful new formed

* Hiſt. Gen. des Voy. liii. 440.

Nilotic Crocodile.

formed regions along the banks of the great rivers, becauſe unable to reſiſt againſt the ſize, arms, ſtrength, and multitude, of the crocodiles. Proſper Alpinus ſays *, that the largeſt crocodiles in Egypt, which are ſometimes thirty cubits long, avoid the neighbourhood of mankind, and keep entirely to that part of the Nile which is above Memphis. In countries that are thinly peopled, this is not to be expected; they are ſo numerous in the great rivers Amazons and Oyapoc, and in the bay of Vincent Pinçon, and the lakes which communicate with it, as to obſtruct, by their numbers, the piraguas and canoes that navigate theſe waters. They follow theſe light veſſels, without, however, attempting to overturn or attack them, in hopes, perhaps, of ſome perſon falling overboard; and it is ſometimes eaſy to drive them out of the way, by means of the oars or paddles †. M. de la Borde writes, that, when he was navigating along the

* Hiſt. Nat. Ægypt, Vol. i. ch. 5.

† On the information of the Chevalier de Widerſpach.

Nilotic Crocodile.

the eaſtern ſhore of South America in a canoe, and wiſhing to enter a ſmall river, he found its mouth occupied by about a dozen large crocodiles; he at firſt tried to drive them away by a few muſket ſhots, but ineffectually; being affraid to force his way through in the canoe, leaſt they might overſet it, and devour him or his people in the water, he was obliged to wait nearly two hours, before they would quit their place and leave the paſſage free.

Beſides the powerful enemies which have been already mentioned, it luckily happens that great numbers of crocodiles are deſtroyed before they get out of the eggs, by animals that are too weak to look them in the face after they have acquired any ſize. The ichneumon, monkeys, ſagoins, ſapajous, and ſeveral ſpecies of water fowls, ſeek for and devour crocodiles eggs with great avidity, and even break vaſt numbers, as if merely in ſport.

* Deſcription of Hiſpaniola, in Hiſt. Gen. des Voy. Part iii. book 5.

Nilotic Crocodile.

The eggs and the flesh of crocodiles, particularly that of the tail and the belly, are used as food by the negroes of Africa, and by several nations in India and America *. This flesh is juicy and very white, and is considered by these people as very delicious; but such Europeans as have ventered to eat of it, have been mostly disgusted by the strong musky flavour with which it is impregnated. M. Adanson, however, says, that he eat part of a young crocodile which he saw killed in Senegal, and thought it tolerably good. It is very probable that the taste of crocodiles flesh will differ, according to the age and nourishment of the individual from which it is taken.

A kind of bezoars is sometimes found in the alimentary canal of the crocodile, and in several other species of lizards. Several of these were in the collection of Seba, who had received them from Amboina and Ceylon: The largest were about the size of ducks eggs, but longer, and their surfaces were covered over with projections, about

* Catesby, Nat. Hist. of Carolina, ii. 63.

about the ſize of ſmall pepper-corns. Like all other bezoars, theſe were compoſed of various layers, one over the other: Their colour was duſky cinereous, more or leſs mixed or marbled with white *. Nilotic Crocodile.

The ancient Romans, though they might have learnt ſomewhat of the hiſtory and appearance of the crocodile, from the reports of travellers, or from the writings of the Greek naturaliſts, never ſaw any till fifty-eight years before the Chriſtian era, when Scaurus the Edile preſented five to the people in the public ſhews †. Auguſtus afterwards produced great numbers of living crocodiles in his ſhews, cauſing men to fight with them in the arena; and Heliogabalus fed numbers for that purpoſe. Theſe tyrants of the Roman World, procured at vaſt expence from Africa, crocodiles, tigers, lions, and other wild animals; and ſeemed to pride themſelves in collecting around them all the moſt ferocious productions of nature.

* Seba, Muſ. ii. 139.

† Plin. Hiſt. Nat. lib. viii. chap. 40.

Nilotic Crocodile.

As the crocodiles were brought from a diſtance, and muſt have been conſidered by the Romans as a very formidable animal, we are not to wonder that very extraordinary medicinal virtues were attributed to them by the ancients: Scarcely any part of their bodies but was ſuppoſed a remedy againſt diſeaſe: The teeth, the ſcales, the fleſh, and the inteſtines, were all prized as ſo many infallible drugs *. The gall, the fat, and the eyes, of the crocodile, are ſtill held in much eſteem, by the modern Egyptians and Arabs †. They were held in ſtill higher veneration, by the ancient natives of Egypt: From inſpiring terror by their ravages, the depraved reaſon of a miſguided people converted them into gods; building altars and appointing prieſts for the ſuperintendence of this ſtrangely perverted worſhip. The city of Arſinoë was peculiarly conſecreted to theſe monſtrous gods; and, when they died, their bodies were ſacredly depoſited in the great pyramids,

* Plin. Hiſt. Nat. lib. xxviii. chap. 28.

† Haſſelquiſt, Voy. to Paleſtine, 347.

pyramids, among the tombs of the Egyptian monarchs *. But, ſuch has been the change of ſentiments, and the progreſs of reaſon, that in the ſame country, where theſe animals were worſhipped two and three thouſand years ago, a reward is now given for their deſtruction. Nilotic Crocodile.

Though M. de la Cepede has choſen to conſider the Crocodiles of the Nile and of America as the ſame ſpecies, ſlightly varied perhaps by difference in climate and food; Linnæus and his late editor Gmelin, with ſeveral older naturaliſts make them ſeparate ſpecies. In the Syſtema Naturæ, the alligator, or American crocodile, is deſcribed as ſmaller than the Nilotic, but having ſimilar manners. The head is ſaid to be flat, and covered with imbricated ſcales, and the neck ſmooth; while the head of the Nilotic ſpecies is deſcribed as reſembling

* Encycl. Method. Dict. d'Antiquités, by M. l'Abbé Mongez l'ainé.

Nilotic Crocodile.

a coat of mail, and the neck as being ridged: In both the upper ſurface of the tail is ſimilarly beſet with two rows of ſerrated projecting ſcales.

ART. II. *THE BLACK CROCODILE.*

Black Crocodile.

THIS ſecond ſpecies differs from the former in being almoſt black, while the other is of a greeniſh or brown colour. M. Adanſon is the firſt author who has deſcribed this black ſpecies, which he has ſeen in the great river Senegal in Africa *. The jaws of this ſpecies are longer than in the Nilotic crocodile. The black crocodile is likewiſe more deſtructive than that of the Nile; and, perhaps, this may be owing to ſome difference in their internal ſtructure, which is often known to modify the manners and diſpoſitions of animals.

The difference of colour in this crocodile cannot certainly be referred merely to the influence of climate; for M. Adanſon

* Voyage to Senegal, p. 73.

ſon has ſeen vaſt numbers of the green crocodile in the ſame rivers, which are preciſely ſimilar to thoſe of Egypt. Theſe black crocodiles have not been ſeen in any other part of the world, except in the river Senegal, and M. Adanſon is the only naturaliſt who has hitherto deſcribed them. Black Crocodile.

In the Syſtema Naturae, a crocodile, under the name of Crocodilus Africanus, or African crocodile, is deſcribed as a variety of the Nilotic, which M. de la Cepede conſiders only as a ſynonime of that ſpecies: From the deſcription given by Gmelin, it ſeems to reſemble his alligator or American ſpecies. The ſnout is much ſhorter than the head, and the neck is ſmooth, or free from the ridged unequal ſcales on the neck of the Nilotic.

ART. III. *THE GAVIAL* *.

Gavial.

THIS third ſpecies of crocodile is found on the banks of the Ganges, in India, where it is known by the name of Gavial, which is here adopted. It is ſimilar in colour to the Nilotic ſpecies, and has all the general characters, which have been already mentioned as diſtinctive of crocodiles. Like the two former ſpecies, it has five toes on each fore foot, and four on each behind; the three inner toes only of all the feet being furniſhed with claws. It differs, however, very remarkably from both

* Le Gavial, ou Crocodile à machoires alongées.

Lacerta gangetica: Having the muzzle very long, rounded, and almoſt cylindrical; the tail being armed with two ſerrated ridges, which unite backwards into one. Syſt. Nat. ed. Gmel. i. 1057. G. 122. ſp. 50. Gronov. gazoph. ii. 11. n. 40. Merck, Heſſ. beytr. ii. 1. p. 73.—Crocodilus terreſtris. Laur. amph. 54. n. 86. Adanſ. Seneg. 73. Seba, Muſ. i. t. 103. 104. f. 1.

Long-noſed crocodile: Having a pouch on the belly; the muzzle reſembling the bill of a gooſander. Edwards, in Phil. Tranſ. xlix. 639. t. 19.

both the former ſpecies, in very diſtinct and appropriate characters. The jaws are very much elongated and narrow, ſo as to reſemble the long beak of a bird, forming a very ſtriking contraſt with the thickneſs and breadth of the head. The teeth are not unequal in length and ſize, as in the two other ſpecies; but they are more numerous: In a ſpecimen nearly eleven feet long in the Royal Cabinet, the upper jaw contains fifty-eight teeth, and the lower jaw fifty. Gavial.

The tranſverſe tuberculated rows of ſcales on the upper part of the body, are about a fourth part more in number than in the crocodile of the Nile: Theſe rows are all cloſe to each other; and the ſquare ſcales, of which they are compoſed, are more protuberant at the edges, and leſs ſo in the middle, than in the Nilotic ſpecies. All theſe differences are certainly more than ſufficient for conſtituting a diſtinct ſpecies.

This Gangetic crocodile, like that of the Nile, grows to a very conſiderable ſize. By comparing the dimenſions of a part of the

Gavial. the jaws of one of these crocodiles, with the same part of a complete specimen near twelve feet long, both of which are preserved in the Royal Cabinet, there is reason to conclude, that the individual, to which the fragment belonged, had measured thirty feet ten inches in length. The following are the principal dimensions of the complete specimen in the Cabinet:

	Feet.	Inches.	Lines.
Total length - -	11	10	6
Length of the head -	2	1	1
Ditto, from between the eyes to the tip of the muzzle	1	7	9
Ditto of the upper jaw	2	0	6
Ditto of ditto so far as the teeth reach - -	1	6	0
Distance between the eyes	0	3	3
Diameter of each eye -	0	2	0
Circumference of the body where thickest - -	3	6	0
Ditto of the head behind the eyes - - -	2	0	0
Ditto of the narrowest part of the muzzle - -	0	6	2

Length

	Feet.	Inches.	Lines.
Gavial.			
Length of each fore leg, to the tips of the claws -	1	3	7
Ditto of each hind leg, to ditto - - -	1	8	0
Ditto of the tail -	5	1	0
Circumference of ditto at the root - - -	2	8	0

It is probably this ſpecies which Tavernier mentions having ſeen on the banks of the Ganges, from Toutipour to Acerat. In deſcending the river, the firſt day he ſaw a great number of theſe animals lying on the ſand. He fired among them, and wounded one in the jaw, but it eſcaped into the river. Next day, he ſaw a great number in a ſimilar ſituation, and fired at two of them, with three balls each time, and killed them both *.

It would appear that the gavial was not altogether unknown to the ancients; for Ælian mentions, that in his time crocodiles were found on the banks of the Ganges, which

* Taverniers Travels, in the Hiſt. Gen. des Voy. Part ii. book 2.

Gavial. which had a kind of horn at the extremity of the muzzle. Mr Edwards, however, is the firſt modern naturaliſt who has mentioned this ſpecies. In the Philoſophical Tranſactions for 1756, he publiſhed a deſcription and figure of an individual of this ſpecies, which he names the long-beaked crocodile, comparing its long and narrow muzzle to the bill of a merganſer, or gooſander. In the ſpecimen deſcribed by Mr Edwards, which appears to have been very young, there is a pouch or open purſe on the belly; but we can find no trace of any ſimilar ſtructure, either in the twelve feet long ſpecimen, nor in one of two feet three inches long, both of which are preſerved in the Royal Cabinet: Perhaps this pouch may only be the remains of the opening in the ſkin, through which the umbilical chord was formerly inſerted, and in this caſe it may become obliterated with age; or, perhaps, the individual deſcribed by Mr Edwards, may have been of a different ſex from either of thoſe which we have ſeen.

There

There is preſerved in the Royal Cabinet part of a jaw filled with teeth, partially petrified and incloſed in a calcarious ſtone, which was found near Dax in Gaſcony, and ſent by M. de Borda to the Cabinet, which, after a very attentive examination, ſeems to have formerly belonged to an individual of this ſpecies. Gavial.

ART. IV. *THE WHIP-TAIL* *.

THIS name has been applied, by different naturaliſts, to ſeveral different ſpecies of lizards, that are able to move about their tails ſomewhat in the manner of a whip, when it is uſed to give a ſtroke or laſh: It has been particularly appropriated to the ſpecies we are about to deſcribe Whip-tail.

* Le Fouette-queue. Encycl. Method.

Lacerta Caudiverbera: Having the tail flatly depreſſed, and indented at the edges; the feet being webbed. Syſt. Nat. ed. Gmel. i. 1058. G. 122. ſp. 2.—Caudiverbera peruviana. Laurent. Amphib. 54. n. 55. Feuill. Per. ii. 319. Molin. Hiſt. Nat. Chil. 191. Seba, Muſ i. 106. t. 1.

Whip-tail. ſcribe in this article, and to the next, which is called the dragon in this work, and the name of cordylus has been given by ſeveral writers to the dragon; by which circumſtances the name of caudiverbera or whip-tail have been applied, not only to the dragon, which really has the whip-like motion of the tail, but to ſeveral other lizards, that have no ſuch property, and are named cordylus by other authors. In order if poſſible to avoid this confuſion in nomenclature, which is always hurtful to ſcience, we have thought it beſt to appropriate the name of whip-tail to that ſpecies only which forms the ſubject of the preſent article.

The whip-tail inhabits the warmer regions of South America, being found particularly in Peru and Chili. It ſometimes grows to the length of ſeveral feet. The back and ſides are covered by ſquare plates and oval ſcales. The tail is indented or notched at the edges, and the animal has the power of ſhaking it like a whip, and ſtriking with it in a ſimilar manner. In the

the flattened form of the tail it has ſome reſemblance with the crocodile; from which, however, it is eaſily diſtinguiſhed, particularly by having five toes on each foot, while the crocodiles have only four on the hind feet. From this latter circumſtance, we are induced to conſider the animal repreſented by Seba, in the hundred and ſixth plate of his firſt volume, as a whip-tail; though it has been quoted by Linnæus as ſynonimous with the crocodile, and by Gmelin as a ſynonime of the alligator: On the other hand, this animal repreſented by Seba, muſt not be confounded with the dragon, as the former has webbed feet, while thoſe of the latter have no membranes interpoſed between the toes. Beſides theſe conſiderations, Seba informs us, that the large lizard, which he has repreſented, came from America, in which it agrees with what Linnæus ſays of the whip-tail. It may be proper to remark, in this place, that the animal repreſented by Seba, vol. ii. t. 103. f. 2. which is quoted as a variety of the whip-tail, in the Syſtema Naturæ, is in reality Whip-tail.

Whip-tail.

ality a dragon; for, though the engraver has given it webs between the toes of the hind feet, the text expreſsly ſays that it has none. It has been already mentioned, in the account of the crocodile, that the large lizard, mentioned by Dampier as a ſecond ſpecies of American cayman, or crocodile, is in all probability the whip-tail.

There is a large lizard, called *Kobberaguion*, in the iſle of Ceylon, which has conſiderable reſemblance to the crocodile; but differs from it in having a long forked blue tongue, which it extends in a frightful manner, when it hiſſes, or even in breathing. This animal is uſually ſix feet long: It frequently goes into the water, and dives with great agility; but its common reſidence is on the land, where it feeds on birds and ſuch other animals as it is able to ſeize. It flies from mankind; but it eaſily drives away dogs, and other animals that attack it, by laſhing them with its long tail, which it brandiſhes exactly like a whip. It is not mentioned, whether its toes be united together by webs: If ſo, it will fall to

be

1. Dragon. - 2 Tupinambis, p. 375. Archer Sculpt.

be considered as belonging to this species of whip-tail; if they are separated, it must belong to the following species of dragon; in either case perhaps altered by the influence of climate. The flesh of this animal is reckoned very bad. Whip-tail.

ART. V. *THE DRAGON* *.

THIS species resembles the crocodile very much in its general form, having a large mouth, tubercles on the back, and a flattened tail: Its size is sometimes equal to that of young alligators; and its colour, of a deep reddish brown, less or more Dragon.

* La Dragonne. Encyclop. Method.

Lacerta Dracaena: Having a smooth body; the tail being long, and denticulated on its upper surface; and the toes being long, distinct, and almost of equal lengths. Syst. Nat. ed. Gm. i. 1059. G. 122. sp. 3.—Lacertus indicus. Ray, Synops. 270. Mus. Worm. 313.—Stellio Salvaguardia. Laur. Amphib. 57. n. 92.—Lacerta maxima Caudiverbera, s. Cordylus. Seba, Mus. i. t. 101. f. 1.

Dragor. more daſhed with green, reſembles that of theſe animals. From all theſe circumſtances of reſemblance, it has been generally conſidered as a ſmaller ſpecies of crocodile, or cayman, on the eaſtern coaſt of South America. But it differs very eſſentially from the crocodile in many particulars. Inſtead of having webbed feet, its toes, of which there are five on each foot, both before and behind, are completely ſeparated from each other, as in almoſt all the ſpecies of lizards; and every one of theſe toes are armed with ſharp hooked claws. The head is flattened on the top, and compreſſed at the ſides, having, in ſome meaſure, the appearance of a four ſided pyramid, of which the muzzle is the ſummit or apex. In this circumſtance, it reſembles ſeveral of the ſerpent tribe, and in the tongue being forked, which, inſtead of being concealed and immoveable, as in crocodiles, is capable of being darted out to a great length with great readineſs. The eyes are large and brilliant. The openings of the ears are large, being ſurrounded by a rim or border of ſcales.

The

Dragon.

The body is thick and rounded, being covered by hard bony ſcales, ſomething like thoſe of the crocodile, almoſt all of them having a projecting ridge in the middle. Several of the ſcales on the back are larger than the reſt, and have projecting tubercles, forming a kind of ſerrated ridge, which is higheſt near the tail, and is even continued along the greater part of that member; on which theſe tubercles are very ſharp, forming two rows like the teeth of ſaws; and theſe rows unite into one towards the end of the tail.

This ſpecies, like the whip-tail immediately preceding, has the power of agitating its long tail, and brandiſhing it like a whip; from which the name of Whip-tail, or Caudiverbera, has been applied to it as well as to the other. But, as this would induce confuſion, we have appropriated that name entirely to the former, from which this is accurately diſtinguiſhable by the toes not being webbed. This ſpecies has likewiſe been named the Cordylus; but that term

Dragon. belongs to a very different lizard, to be afterwards deſcribed.

The dragon is principally, if not excluſively, found in South America. The ſpecimen in the Royal Cabinet, from which this article was drawn up, was ſent from Cayenne by M. de la Borde. It is very ſimilar to the deſcription given by Wormius, of a ſpecimen in his collection, which meaſured four Roman feet in length. It was known to Cluſius *, and likewiſe to Seba, who had one in his muſeum. The following are the principal dimenſions of our ſpecimen in the Royal Cabinet.

	Feet.	Inches.	Lines.
Total length - -	2	5	4
Circumference of the mouth	0	4	4
Diſtance between the eyes -	0	1	0
Circumference of the thickeſt part of the body -	0	7	6
Length of the fore legs to the tips of the toes -	0	3	10
Ditto of the hind legs to ditto	0	5	6
Length of the tail -	1	4	6

Circumference

* Cluſ. Exot. lib. v. chap. 20.

	Feet.	Inches.	Lines.
Dragon.			
Circumference of ditto at its root - - -	0	5	8

Wormius mentions the number and form of the teeth of this ſpecies, ſaying that it has ſeventeen on each ſide in the lower jaw, the back teeth being large and blunt, while the fore teeth are ſmall, and very ſharp; and we find that his account agrees with the ſpecimen in the Royal Collection. Pliny has been much blamed for diſtinguiſhing the teeth of the crocodile into inciſors, tuſks, and grinders. We have already ſeen how that great naturaliſt is to be underſtood, in his account of the tuſks or canine teeth of the crocodile; and perhaps his miſtake reſpecting the grinders proceeded from miſinformation. It is poſſible, however, that the dragon may inhabit thoſe countries of the Eaſt with which the ancients were acquainted, as we have already mentioned that the kobbera-guion of Ceylon may not unlikely be a variety of dragon; and, as the animal itſelf may have been miſtaken for a crocodile, its large blunt

Dragon.

back teeth may have been impoſed on Pliny as having belonged to the crocodile. Even in more modern times, travellers have introduced very great confuſion into their accounts of the crocodile, and other large lizards which approach to it in ſize and form, which have occaſioned ſeveral errors in the opinions of very reſpectable naturaliſts, reſpecting the form, habits, and manners of theſe animals.

The great reſemblance between the dragon and the crocodile, might induce a belief that their manners were ſimilar: But theſe two lizards differ from each other in one of theſe eſſential characters which influence exceedingly the habits of all animals. The feet of the dragon are not palmated or webbed, like thoſe of the crocodile, but all its toes are perfectly ſeparated from each other. Hence its manners muſt be extremely different from thoſe of that other animal. Owing to that conformation of its feet, it ſwims much more difficultly than the crocodile, and walks or runs with greater eaſe, and much more ſwiftly;

it

it is likewiſe able to climb trees, and feeds on animals that frequent the woods. M. de la Borde has choſen to give this ſpecies the compound name of *lizard-cayman*, as forming a kind of connecting link between the crocodile and the ſmaller lizards: He adds, 'That it frequents the inundated ſavannas and marſhy plains; but 'that it is much more on the land than in 'the water, and baſks much in the ſun. 'It is extremely difficult to take one of this 'ſpecies, as it hides itſelf in holes, and 'bites violently when attacked. It generally darts out its cloven tongue, after 'the manner of ſerpents. That gentleman 'kept one for ſome time alive: It often 'concealed itſelf under water, eſpecially 'when frightened, and ſometimes remained for hours under the ſurface; but it 'frequently came out, on the dry ground, 'to baſk in the ſun.' Dragon.

M. de Buffon, in his Natural Hiſtory of Birds, has ſhown how ſtrongly animals are influenced in their habits by the conformation of particular organs; particularly, that,

Dragon.

by the form and ſtructure of their bills, birds are remarkably determined in the choice of their food, being thereby conſtrained to inhabit certain ſituations where that is moſt readily procured; and that their other principal habits are modified and produced by this ſingle circumſtance. Though, in that claſs, the faculty of flying allows them more readily to change their place, and conſequently renders them leſs dependent on the peculiar ſtructure of their feet, yet certain orders of birds are very ſtrikingly modified in their manners by that circumſtance of their form. Some birds have webbed-feet, which enable them to ſwim with great readineſs; others again have ſtrong and ſharp talons, which give them the power of attack and defence, &c. In the various claſſes of quadrupeds, both viviparous and oviparous, being more confined in their faculties, their habits are rendered more ſtationary, in dependence on the ſtructure of particular parts. Thus the nature of their food is not only modified by the form of their mouth or of their teeth,

but

but even by the conformation of their feet; which provide them with ſtronger or weaker means of ſeizing their prey, of changing place with greater or leſſer agility, and of inhabiting the waters, the ſhores, the open plains, the foreſts, &c. The mouth being more or leſs extenſive; a few teeth more or leſs; divided toes or webbed feet; ſharp talons or blunt claws; and many other circumſtances, are ſufficient ſingly to occaſion very great differences in their habits. Examples of this doctrine may be found throughout the claſs of oviparous quadrupeds; among which, moſt of thoſe animals that have ſimilar manners, that inhabit ſimilar ſituations, or that feed on the ſame kind of nouriſhment, have their teeth, their mouths, or their feet, conſtructed in a ſimilar manner; however different they may be, in the general form, ſtrength, and ſize, of their bodies. Dragon.

The moſt ſtriking difference between the manners of the dragon, from thoſe of the crocodile, is by no means produced by the poſſeſſion or want of any particular ſenſe,

Dragon.

ſenſe, but merely by the want of a particular membrane between the toes, and by having a few more claws on each foot. Similar effects, proceeding from ſimilar or analogous circumſtances, may be readily perceived by an attentive examination of moſt animals: The ſame thing would certainly take place in mankind; among whom very trivial differences in external conformation, would produce conſiderable diverſity of manners and habits, were it not that intelligence, cultivated in ſociety, has invented artificial compenſations for the defects of nature.

The ſame animals may be expected to prey on the dragon, which have been formerly mentioned as attacking the crocodile: The former animal, however, has leſs ſtrength for reſiſtance, and is even preyed on by the larger alligators. Owing to its different mode of life, the fleſh of the dragon may be ſuppoſed very different in taſte and flavour from that of the crocodile: Accordingly it is conſidered as very ſucculent and delicious by the Weſt Indians, who

who compare it to that of a fowl. M. de la Borde informs us, that the eggs of the dragon are much ſought after in Cayenne, and that the female lays ſeveral dozens of eggs each ſeaſon. Dragon.

A ſpecies of lizard, named *Ignarucu*, is found in Braſil, particularly about the river St Francis, which has conſiderable reſemblance to the crocodile, but is ſaid to climb trees with great readineſs. This lizard is probably only a variety of the dragon, from which it differs, by being of a deeper colour, and in its claws being weaker.

ART. VI. *THE TUPINAMBIS**.

THIS ſpecies, which is here diſtinguiſhed by the name it receives from the inhabitants of America, is found in the warmer Tupinambis.

* Tupinambis, in America; Galtabé, in Senegal; Tilcuetz-pallin, in Mexico; Lezard moucheté, Encycl. Method.

Called

Tupinambis.

warmer regions of both worlds. It has been alledged that, on the borders of the river Amazons and in Guiana, the tupinambis ſometimes grows to the length of twelve feet; but this error muſt certainly have ariſen from miſtaking a crocodile for a tupinambis. When it meets with abundance of food, and all other circumſtances are moſt favourable to its growth, it never exceeds ſix or at moſt ſeven feet in length. The ſpecimen preſerved in the Royal Cabinet, from which the ſpecies has been here deſcribed, and which came from the Cape of Good Hope, meaſures three feet eight inches long. Another ſpecimen, which was brought from Senegal, meaſures four feet ten

Called Cayman, Guano, Ligan, Ligans, by ſome voyagers; which names confound it with the Guana and the Crocodile.

Lacerta Monitor: Having a ſmooth body, with eye-like ſpots; the tail being long and ridged on the upper ſurface. Syſt. Nat. ed. Gmel. i. 1059. G. 122. ſp. 6. Muſ. ad. frid. i 41. Seba, Muſ. ii. t. 86. f. 2. ii. t. 30. f. 2. ii. t. 49. f. 2. ii. t. 99. 1. ii. t. 100. f. 3. i. t. 97. f. 2. i. t. 94. f. 1. 2. 3.—Stellio Salvator. Laurent. Amph. 56. n. 90.—Stellio Saurus. D°. 56. n. 89.

ten inches. The following are the principal dimenſions of that in the Royal Cabinet. Tupinambis.

	Feet.	Inches.	Lines.
Total length - -	3	8	0
Circumference of the mouth	0	4	8
Ditto of the body where thickeſt - - -	1	1	3
Length of the fore leg, to the tip of the toes -	0	5	9
Ditto of the hind leg, to ditto	0	6	9
Ditto of the tail - -	1	10	6
Circumference of ditto at the root - - -	0	7	10

The tail of the tupinambis is flattened laterally, and almoſt equals the length of the body: It has no ſerrated ridge, like that of the dragon, having only a plain ſlight projection on its upper ſurface. All the feet have five tolerably long toes on each, all armed with ſtrong hooked claws. The whole body, head, tail, and feet, are covered by ſmall oval hard ſcales a little elevated, diſpoſed in numerous tranſverſe circular rows; which form a very eſſential character, for diſtinguiſhing this ſpecies, from

Tupinambis.

from all other lizards. In the individual that was ſent from the Cape, theſe ſcales meaſured about half a line in their longeſt diameter. The colouring of the tupinambis is ſomewhat elegant, being in general a darkiſh ground, with a number of large irregular blotches and bars of almoſt pure white, giving a marbled appearance, and ſometimes reſembling a kind of lace patern on the ſides: This is ſubject, however, to conſiderable variety, as ſeven diſtinct varieties of the ſpecies, differing chiefly in colours, are enumerated in the Syſtema Naturae, on the authority of Seba and Laurenti. From the brilliancy given by this diſpoſition of its colours, the tupinambis is ſo much the more expoſed to danger; for, living in the ſame places with the crocodile, its moſt bitter enemy, it is thereby the more readily diſcovered at a diſtance.

The tupinambis has not ſufficient ſtrength to defend itſelf againſt the larger animals of prey, and never attacks mankind. It feeds on the eggs of birds *, on ſmaller lizards,

* Mad. Merian, in Hiſt. Gen. des Voy. liv. 430.

lizards, and on fiſh, which laſt it follows in the water. Being much ſmaller than the crocodile, and having much leſs ſtrength, and leſs powerful arms of offence, it neceſſarily is more often in want of proper food than that animal, and conſequently is obliged to be leſs particular in its choice: It is likewiſe obliged to be very cautious, in purſuing its prey, as the crocodile, againſt which it is incapable of defence, is very numerous in all thoſe places which it inhabits. It is reported, that the approach of a crocodile inſpires it with great terror; and that, on ſuch occaſions, it emits a very audible whiſtle or hiſſing noiſe, which often ſerves as a ſignal of danger to mankind, when bathing in thoſe waters which are frequented by both animals: From this circumſtance, ſeveral voyagers have honoured the tupinambis with the name of Safeguard, *Salvator*, or *Salvaguardia;* which name has likewiſe been given to the dragon, by ſome writers, probably on a ſimilar account.

Tupinambis.

The

Tupinambis.

The ſexual organs, and manner of union, in this ſpecies, reſemble thoſe already mentioned as common to the other lizards. In a ſpecimen of a male, two feet eight inches long preſerved in the Royal Cabinet, which was killed during the congreſs, the double penis, the two parts of which are conſiderably ſeparate, and meaſure each one inch and three lines in length, are without the anus. The female lays her eggs in holes, which ſhe digs on the banks of ſome river; the eggs are tolerably large, and of an oval ſhape, and are eaten by the natives *: We have been aſſured, by ſeveral Europeans, who had eaten of theſe eggs both in Africa and America, that they are extremely good. The ſun hatches the eggs of this animal, as has been already related of the crocodile. Bezoars, ſimilar to thoſe procured from crocodiles and other lizards, are found in the tupinambis; and the ſame chimerical virtues are attributed to them, as remedies in certain diſtempers. One belonging to Seba, was of a clear grey or

* Hiſt. Gen. des Voyages. liv. 430.

or aſh colour, ſpotted with black, and about the ſize of a pigeons egg *. Tupinambis.

From the difficulty which is often experienced by the tupinambis in procuring food, its choice muſt conſequently become vitiated, in a great meaſure, famine being a very powerful cauſe, for modifying and changing the habits of all animals. In caſe of extreme want, it is frequently forced to feed on half putrid carcaſes; and, even when theſe are not to be found, it hunts after ants and flies: Theſe laſt it ſeeks for in the woods, which it frequents equally with the waters and the banks of rivers. From the length and ſeparation of its toes, it can very readily climb up trees, where it ſearches for birds neſts on purpoſe to devour the eggs, and even attempts to catch the birds themſelves; but, in this latter employment, it cannot be expected to meet with great ſucceſs, againſt animals ſo much more nimble than itſelf. Thus an animal, to which mankind has affixed the title of ſafeguard, is condemned to ſeek its food through

* Seba, Muſ. ii. 140.

Tupinambis.

exceſſive difficulties, often obliged to put up with the moſt diſguſting nouriſhment, is even frequently reduced to extreme want, and generally ends its courſe by falling a victim to the appetites of ſome ſtronger animal.

The animal named Tejucuacu, and Temapara, in Braſil, is the ſame with the tupinambis; but, as theſe names have likewiſe been given to ſeveral other very different lizards, conſiderable confuſion and uncertainty have been thereby induced in this part of natural hiſtory. Maregrave ſays, that he has ſeen a tupinambis live ſeven months without food; and that ſome perſon having bruiſed a part of its tail, by treading on it, the wound not only healed, but two inches of the extremity of the tail was replaced by a new growth.

ART. VII. *THE SUPERCILIOUS LIZARD* *.

Supercilious Lizard.

THIS lizard, which has received the trivial name of ſupercilious, from a projecting ridge, covered with ſmall ſcales, over each eye, reſembling eyebrows, is found in Ceylon, Amboina, and probably in other ſimilar parts of India. It is likewiſe diſtinguiſhed by a ridge of upright ſcales, which reaches from the back of the head to the extremity of the tail, reſembling a kind of indented creſt. The eyes are very large, and the openings of the ears are very wide. The mouth is large, and the muzzle is pointed. The tail is flattened laterally, and is much longer than the body. The toes are very long, and much ſeparated from each other, eſpecially thoſe of the hind

 feet,

* La Sourcilleux. Encycl. Method.

Lacerta ſuperciliosa: Having the tail ridged on its upper ſurface; the back and eyebrows being fringed with projecting ſcales. Syſt. Nat. ed. Gmel. i. 1063. G. 122. ſp. 4. Muſ. ad. frid. i. 40. Seba, Muſ. i. t. 94. f. 4. & i. t. 109. t. 2.

Supercilious Lizard.

feet, on each of which the fourth toe is as long as the head. The claws are ſtrong and hooked. The ſcales are of unequal ſizes, but all of them very ſmall, having a longitudinal ridge or elevation on each; and they are imbricated, or placed lapping over each other, like the ſcales of moſt fiſhes. The genetal colour is bright brown, ſpotted with deeper and brighter red. The total length of the ſpecimen from which this deſcription was formed, and which is preſerved in the Royal Cabinet, is twelve inches.

As the toes of this ſpecies are very long and much divided, its habits ſhould be expected to reſemble thoſe of the dragon, at leaſt in many reſpects. It is ſaid by Seba, to cry very loud, as a ſignal for the ſcattered individuals to gather.

The diſtinct elevated ſcales, forming a kind of armour, which we here meet again, have not been excluſively allotted to this ſpecies and the dragon: This remarkable character, like all others belonging to animals, is found in various ſpecies, with leſs

or

or more distinctness. The elevated ridge of serrated scales, is likewise by no means confined to this species; but is found on the Fork-headed lizard, the Guana, the Basilisk, and some others: But this character, like the former, is subject to great variation in the different species; sometimes it is composed of long rays, sometimes these are sharp, broad, and very short; it varies likewise in position, being sometimes extended over the whole body, from the top of the head to the extremity of the tail; sometimes it is not found on the head, but extends over the neck, back, and tail; and is sometimes even found on the under side of the neck and body. Supercilious Lizard.

ART. VIII. *THE FORK-HEADED LIZARD**.

IN the island of Amboina, and consequently in the same climate with the supercilious lizard, another species is found, Fork-headed Lizard.

* La Tête-fourchue. L'occiput-fourchu. Encycl. Method.

Lacerta

Fork-headed Lizard.

which has conſiderable reſemblance with that oviparous quadruped. Like the former, this ſpecies has on the whole ridge of the body, from the head to the extremity of the tail, a ſerrated row of ſhort pointed ſcales, which are more ſeparated from each other on the back than in the ſupercilious lizard. The tail is compreſſed at the ſides, and is equal in length to the body and head. The upper part of the head, which is ſhort and convex, is marked by two protuberant and pointed knobs, like a kind of forked horn, from which the trivial names, in French and Engliſh, are derived. According to Seba, the muzzle is ornamented by a large projecting tubercle, ſurrounded by other ſmaller tubercles, of a whitiſh colour. The neck is tumid and puffed out. The

Lacerta ſcutata: Having the tail ſomewhat compreſſed, and of a middle length; the ridge of the back being ſerrated, and the hind head marked with two pointed knobs. Syſt. Nat. ed. Gmel. i. 1063. G. 122. ſp. 5.—Salamandra prodigioſa ſcutata. Seba, Muſ. i. t. 109. f. 3. 4.—Iguana clamoſa. Laur. Amphib. p. 49. n. 74.

The whole body is covered with round elevated white knobs, which are likewiſe found below the eyes and the lower jaw. The thighs, legs, and toes, are long and ſlender. Fork-headed Lizard.

The external characters of this and the preceding ſpecies, reſemble each other in ſo many circumſtances, that their habits ſhould naturally be expected to be conſiderably ſimilar: Accordingly Seba ſays, that the ſame cry is uſed by both, as a ſignal of danger.

ART. IX. *THE THICK-TOED LIZARD**.

THIS ſpecies inhabits South America. The tail is compreſſed at the ſides, and ſlightly ridged on its upper ſurface, being twice as long as the body: It is ſtriat- Thick-toed Lizard.

* Le Large-doigt. Encycl. Method.

Lacerta principalis: Having the tail ſlightly ridged, the back plain, and the throat creſted but not ſerrated. Syſt. Nat. ed. Gmel. i. 1062. G. 122. ſp. 7. Muſ. ad frid. i. 43. Amoen. acad. 1. 286. t. 14. f. 2.

Thick-toed Lizard.

ed underneath, and is divided into ſeveral portions, or apparent joints, each of which is compoſed of five rings or annular rows of very ſmall ſcales. The under ſide of the neck is furniſhed with a dependant creſt or membrane, a good deal like that of the Guana, but not indented or ſerrated on its edge. All the toes, both behind and before, have the lower part of the foremoſt joint but one conſiderably larger and thicker than the reſt; from which circumſtance the name here given to the ſpecies, both in French and Engliſh, is derived. The head is flat on its upper part, and compreſſed at the ſides; having the openings both of the ears and noſtrils very ſmall.

ART. X. *THE TWO-SPOT LIZARD* *.

Two-ſpot Lizard.

THIS ſpecies was firſt deſcribed by Dr Sparrman, in the Memoirs of the Stockholm Academy for 1784, from ſeveral

* Le Bimaculé.

Lacerta bimaculata: Having the tail, which is twice

ral ſpecimens ſent to the muſeum of Baron de Geer, from North America, by Dr Acrelius. In ſome of theſe ſpecimens, the upper parts of the body were ſpotted with black; but in every one there were two large black ſpots on the ſhoulders, from which circumſtance the trivial name, here retained, was adopted by Sparrman. The head is compreſſed, or flattened at the ſides. The tail is flattened laterally, and is twice the length of the body. All the toes are edged with membranes, or lobed at their ſides, except the outer toe of each foot. The ground colour of this ſpecies is variable, but is moſt commonly blackiſh or greeniſh blue. All the feet have five toes. Two-ſpot Lizard.

This ſpecies is found in Penſylvania and St Euſtachius, and frequents the woods, living much in the hollows of trees: It is likewiſe found in drains, and other ſubterraneous

twice the length of the body, ridged and ſerrated on its upper edge; all the toes being edged with membranes. Syſt. Nat. ed. Gmel. i. 1059. G. 122. ſp. 52. Sparrm. nov. act. Stockholm. v. 3. n. 1. t. 4.

Two-ſpot Lizard.

terraneous places. Its voice is a kind of whiſtle, which it emits frequently. It is eaſily taken by means of a bunch of ſtraw, which is brought towards it, the perſon who carries the ſtraw imitating its whiſtle, when the animal leaps in, and is ſecured. The female depoſits her eggs in a hole in the ground.

ART. XI. *THE TWO-RIDGED LIZARD* *.

Two-ridged Lizard.

THIS ſpecies, which is thus named on account of a double projecting ridge on the upper ſide of its tail, is found in India, and in South America. It is placed in this diviſion, becauſe its flanks are covered by convex tuberculated ſcales, and becauſe its tail is flattened or compreſſed at the ſides. The body has no denticulations, or

* Le Silloné. Encycl. Method.

Lacerta bicarinata: Having a compreſſed tail, of a moderate length, with a double ridge on its upper ſurface; the body having four ridges. Syſt. Nat. ed. Gmel. i. 1060. G. 122. ſp. 8.

or ſharp projecting ſcales; but the back is diſtinctly marked, like the tail, by two rows of ſlight projections, and a ſimilar longitudinal ridge, or plait of the ſkin, is ſeen on each ſide. The under ſide of the neck has no projection. The belly is covered by twenty-four tranſverſe rows of ſcales, each compoſed of ſix pieces. The tail is ſcarcely once and a half the length of the body, being ſtraited underneath, ſmooth at the ſides, and having a double projecting ridge on its upper ſurface. Two-ridged Lizard.

II. DIVI-

II. DIVISION.

OF LIZARDS,

Having their Tails round, five Toes on all the Feet, and a creſt or projecting ridge of ſcales along the middle of the Back.

ART. XII. *THE GUANA* *.

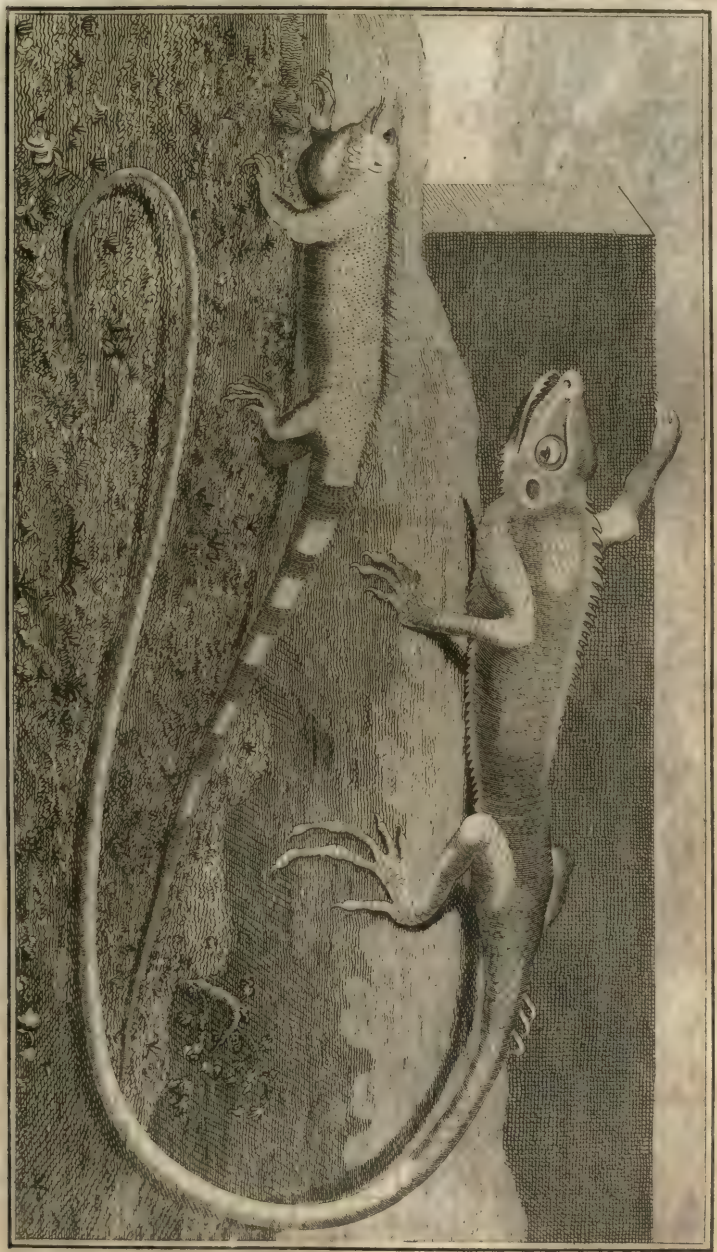
Guana.

IN ſeveral parts of South America, where Nature ſeems to have exerted her whole creative power, vaſt rivers, deſcending from the

* L'Iguane. Encycl. Method.

Lacerta Iguana: Having a long rounded tail; the back being creſted; and the throat having a ſerrated creſt. Syſt. Nat. ed. Gm. i. 1062. G. 122. ſp. 26. Amoen. Acad. i. 123. 287. Muſ. ad. frid. i. 43.

Iguana. Gronov. Muſ. ii. 82. n. 60.—Iguana delicatiſſima. Laur. amphib. 48. n. 71.—Iguana, ſ. Senembi. Maregr.



1. Guana.—2. Kalot, p. 363. Archer. Sculp.

the enormous ridge of the Andes, ſpread their waters at certain ſeaſons of the year over the immenſe plains of that new formed country, in which man has not hitherto raiſed any obſtacles againſt the inundations. The ſlimy flats, along the borders of theſe vaſt and rapid rivers, are covered by extenſive foreſts of ancient trees, which, aſſiſted by the heat of the climate, and by the moiſture and fertility of the ſoil, are cloathed with the moſt luxuriant vegetation, and flouriſh in perpetual verdure, giving a lively picture of that unbounded fertility, which nature, ſtill in the vigour of youth, has been pleaſed to laviſh on theſe vaſt ſolitudes. Vegetables of infinite variety are not the only productions of theſe fertile regions: As Guana.

Marcgr. braſ. 236.—Iguana tuberculata. Laur. amph. n. 72.—Leguana. Bomare, Dict. in voc.—Lacertus, dictus Senembi, Tamacolin, et Iguana. Seba, Muſ. i. t. 95. f. 1. 2. t. 96. f. 4. t. 97. f. 3. t. 98. f. 1.—Yvana. Olear. Muſ. t. 6. f. 1. Cluſ. exot. 116.—Lacerta Leguan. Bont. jav. t. 56.—Guana. Brown, jam. Sloan, jam. 333. Cateſb. carol. ii. 64.—Grand Lezard, Gros Lezard, ou Iguane. Dutertre. 308. Rochef. 144. Labat. 1. 314.

Guana. As if preparatory to their being taken poſſeſſion of by man, nature has here eſtabliſhed an endleſs number and variety of animals, of every kind, and of all ſizes: Some of theſe are admirable for the beauty of their ſcales, the brilliancy of their colours, and the agility and ſwiftneſs of their motions; others by the elegance and ſplendour of their plumage; and all of them, by the diverſity of their forms, and in a thouſand other ways, contribute to fill up the wonderfully magnificent picture of life and animation.

In one place the vaſt rivers roll on their majeſtic waves in regular order, while in another their foaming torrents are precipitated from the tops of immenſe and lofty rocks, raiſing continual clouds of vapour to the ſkies, and reflecting in a thouſand fanciful forms, the ſplendidly ſubdivided tints of the ſolar beams. Here an infinite variety of beautiful flowers enamel the verdant turf, and are in their turn eclipſed, by the more brilliant plumage of numberleſs birds. There ſtill more brilliant colours,

becauſe

becauſe reflected from more denſe and polifhed ſurfaces, adorn the ſcales of the large and beautiful lizards, which are ſeen with aſtoniſhment on the tops of the trees, uſurping part of the dwellings of the birds. Amid all theſe wonderful living ornaments, whoſe charming forms and delicate motions are contemplated with aſtoniſhment; among the branches, and flowers, and animals, of theſe thick forcſts, the dragon and tubinambis are not the leaſt remarkable: But the lizard, which forms the ſubject of this article, is ſtill more brilliant, from the beauty of its colours, the ſplendour of its ſcales, and the ſingularity of its form. Guana.

The guana is eaſily diſtinguiſhed from all other lizards, by the large pouch which hangs from the under ſide of its neck, and by the ſerrated or indented creſt, which reaches from the head to the extremity of the tail, and which likewiſe adorns the fore part of the throat. The extreme length of this lizard, from the tip of the muzzle to the end of the tail, ſometimes extends

Guana.

extends to five or six feet. While M. Brue resided at Kayor, on the river Senegal, he was shown a guana that measured three feet from the muzzle to the origin of the tail, which was about two feet long; but, as in this species the tail is longer than the body and head together, that individual must have lost part of its tail by accident. Its skin was covered with small scales, of various colours, yellow, green, and black, and seemed highly varnished. The eyes were red, and very large, opening almost to the top of the head; and, when irritated, it swelled out the pouch on its throat, like that of a pigeon, and the eyes seemed on fire *. The specimen in the Royal Cabinet, which was sent by M. Sonini from Cayenne, and from which the description in this work was formed, was four feet long, and its principal dimensions were as follow:

	Feet.	Inches.	Lines.
Total length - -	4	0	0
Circumference, where thickest	1	0	4

Cir-

* Hist. Gen. des Voyages, lib. vii. chap. 18.

	Feet.	Inches.	Lines.
Circumference at the origin of the tail - - -	0	5	9
Ditto of the upper jaw	0	3	3
Length of the largeſt ſcale on the ſide of the head	0	1	0
Ditto of the pouch under the throat - - -	0	3	4
Breadth of ditto - -	0	1	10
Length of the longeſt ſcale on the creſt - - -	0	1	10
Length of the tail -	2	7	4
Length of each fore leg, to the extremity of the toes	0	7	1
Ditto of each hind leg, to ditto - - -	0	9	9
Ditto of the largeſt claw	0	0	8

The head of the guana is compreſſed at the ſides, and flattened at the top. The teeth are ſharp, and reſemble much in form thoſe of the green lizards, that are found in the ſouth of France. The muzzle, between the eyes, and the circuit of both jaws, are covered with ſmooth, ſhining, and highly coloured ſcales; three of theſe, larger than

Guana.

the reſt, are placed on each ſide of the head, beneath the external ear, and one of theſe three, larger than either of the others, is of an oval figure, and of remarkable poliſh and brilliancy, like that of a metal. The eyes and the openings of the ears are very large. Above the noſtrils, the top of the head, and each ſide of the neck, are ſtudded with tubercles, like the figure of cut diamonds. A kind of creſt, compoſed of large projecting ſcales, ſomewhat like ſpear-points in their form, extends from the extremity of the lower jaw, under the throat, and ornaments the fore part of the dilatable pouch on the neck. The body, the tail, and the legs, are covered by ſmall ſcales, which form a projecting ridge on the back. This ridge or creſt on the back, which extends from the top of the head to the extremity of the tail, is compoſed of very long ſharp ſcales, ſtanding perpendicularly upwards; the higheſt of theſe are on the middle of the back, and they diminiſh gradually in length towards the end of the tail, where they are hardly perceptible.

ceptible. The tail is round, inſtead of being compreſſed at the ſides, as in the crocodiles, and the preceding ſpecies of lizards, and it tapers very much towards the tip. Each foot, both behind and before, has five divided toes, armed with ſtrong hooked claws. On each fore foot, the firſt or innermoſt toe has only one joint, or phalanx, the ſecond has two, the third three, the fourth four, and the fifth or outermoſt two. On each hind foot, the innermoſt toe has one phalanx, the ſecond two, the third three, the fourth four, and the fifth, which is ſeparated from the reſt like a thumb, has three. Guana.

On each ſide, under the thighs, there is a row of fifteen hollow tubercles, which are all perforated at their ſummits, as if intended as outlets or excretory ducts to ſome ſecretion. We ſhall hereafter have occaſion to notice a ſimilar ſtructure in ſeveral other ſpecies of lizards: Its uſe has not been hitherto aſcertained, but it is an intereſting object of inquiry. In general, the ground colour of this ſpecies is green,

Guana.

mixed with yellow, or with different ſhades of blue: On the belly, the legs, and the tail, theſe colours are often variegated in ſtreaks. In the individual, from which our deſcription was formed, the tail was ſurrounded with rings of different colours: But the colours of this ſpecies vary from various circumſtances of age, ſex, and climate; as we have aſcertained by inſpection of various ſpecimens of both ſexes, of different ages, and from different countries; which explains the apparent contradictions that are found in the deſcriptions of the guana, as given by various voyagers and naturaliſts.

The diſpoſitions of this ſpecies, which feeds entirely on vegetables and inſects, are extremely gentle and harmleſs. We muſt not, however, be ſurpriſed at the terrifying appearance which has been attributed to it, by ſome travellers; eſpecially when, agitated by fear or wrath, its eyes ſeem on fire, it hiſſes like a ſerpent, it ſwells out its pouch under the throat, laſhes about its long tail, erects the ſcales on its back, and holds

holds its head, briſtled all over with tubercles, in a menacing poſture. Guana.

The female is uſually ſmaller than the male; her colours and proportions are more elegant and agreeable; her appearance is more gentle and pleaſing; and her ſcales have frequently a very fine and brilliant green colour. All theſe beauties have not, apparently, been beſtowed in vain, but ſeem to have produced the moſt violent attachment on the part of the male. On the beginning of the fine weather, at the end of winter, the male ſeeks for the female with great ardour; and, forgetting his uſual gentleneſs or ſtupidity, he defends his mate even with fury, attacking every object that ſeems inclined to hurt her, with great boldneſs; and, at this time, though his bite is by no means poiſonous, he faſtens ſo firmly, that it is neceſſary either to kill him, or to beat him violently on the noſe to make him quit his hold *.

The female uſually quits the woods or mountains about two months after the end

* Cateſby, Nat. Hiſt. of Carolina, ii. 64.

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of winter, on purpoſe to depoſit her eggs in the ſand of the ſea ſhore. Theſe eggs are always unequal in number, from thirteen to twenty-five. They are longer, but not thicker, than pigeons eggs. The outer covering is white and flexible, more like thoſe of the ſea tortoiſe, than the eggs of crocodiles. The inſide is whitiſh, and has no glairy matter, like the white in birds eggs. Moſt travellers ſay, that theſe eggs give an excellent reliſh to ſauces, and that their taſte is preferable to that of poultry eggs.

The guana, according to moſt authors, ſwims with difficulty, though it is moſtly found on the ſhores of the ſea, and the banks of rivers. Cateſby ſays, that, when in the water, it uſes its tail almoſt alone for ſwimming, keeping all its feet drawn cloſe up to its belly *. This difficulty of directing its courſe through the water, muſt proceed from its toes being divided; and agrees with our general ideas of the influence

* Cateſby, loco ſupra citato.

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ence produced on the habits of animals by their external conformation.

In ſpring, the guanas feed much on the flowers and leaves of a tree named *mahot*, which grows along the banks of rivers; they feed likewiſe on a plant called *anone*, and on ſeveral other vegetables; and Cateſby remarks, that their fat takes the colour of the laſt kind of fruit on which they happen to feed *. This circumſtance confirms what has been formerly mentioned, of the influence of various kinds of food, in colouring the fleſh and fat of the ſea tortoiſes. M. de la Borde informs us, that they frequently come down from the trees, in ſearch of earth-worms, flies, and other inſects. Though furniſhed with powerful jaws, they ſwallow all their food without hardly chewing it †.

The guana runs with aſtoniſhing nimbleneſs along even the higheſt branches of trees, around which it twiſts its body and tail, concealing the head in the vari-

* Cateſby, loco ſupra citato.

† Id. ibid.

Guana.

ous foldings of the body *. In Surinam the guana, with various others lizards and ſeveral kinds of ſerpents, frequent the branches of a ſweet ſmelling ſpecies of jaſmine †. When they have regaled themſelves with food, they retire to reſt on the branches which overhang the water; and at this time, notwithſtanding their uſual agility, they become quite ſtupid, and are eaſily caught. The natural gentleneſs of their diſpoſitions, increaſed perhaps by that langour, to which moſt lizards and ſerpents are ſubject, after ſwallowing a conſiderable quantity of food, occaſions the tranquillity and inattention, remarked by moſt voyagers, with which theſe animals, though naturally timid and active, permit the approach of danger. The guana is difficultly killed, by blows, or even by wounds from fire arms; but it dies very ſpeedily, after puſhing any ſharp inſtrument, even a ſtraw, up its noſtrils; this occaſions the flow

* Cateſby, loc. citat.

† Hiſt. Gen. des Voyages. liv. 411.

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flow of a few drops of blood, after which the animal expires *.

The ſtupidity or apathy, with reſpect to danger, which has been attributed to the guana, and which is almoſt always the companion of innocence, is ſo great, that the animal is very eaſily caught alive. In ſeveral countries of America, it is hunted with dogs, that are trained to the chaſe; but it is likewiſe eaſily taken in traps †, or by the following artifice. The perſon who means to catch a guana, takes a long ſtick, having a ſmall ſtrong chord at its extremity, formed into a running nooſe. When he diſcovers a guana extended on the branch of a tree, baſking in the beams of the ſun, he advances ſlowly, whiſtling in a particular manner; the animal ſeems pleaſed with the ſound, and extends its head as if to liſten; coming gradually nearer, and continuing to whiſtle, he begins by tickling the ſides and throat of the guana, which not only admits this liberty, but turns itſelf up

* Hiſt. Gen. des Voyages. lib. vii. chap. 17.

† On the information of M. de la Borde.

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up gently to receive it, ſeeming delighted with the treacherous careſſes: Thus, ſeducing it, as it were, by tickling and by the ſound of his whiſtle, to its ruin, he induces it gradually to lift its head from among the branches, and dexterouſly ſlips the nooſe over its neck; then giving it a ſudden jerk, cauſes it to fall on the ground, and, ſeizing it by the root of the tail, places one of his feet on its body to hold it faſt *. Notwithſtanding the apparent natural ſtupidity and gentleneſs of the guana, it no ſooner finds its confidence thus groſsly abuſed, but it endeavours to aſſume a violence that does not ſeem congenial to its nature: It becomes extremely agitated; its throat ſwells out with rage, its eyes ſeem all on fire, and it opens its large mouth: But all its efforts are now in vain; the hunter, preſſing it to the ground with his whole ſtrength, holds it faſt, till he has tied its mouth and legs, ſo that it is no longer capable either of flight or defence.

The

* Voyages of Labat, in Africa and America; and Cateſby, Nat. Hiſt. of Carolina.

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The guana may be kept alive without food for ſeveral days. When firſt taken, it ſeems exceſſively averſe from the reſtraint; it is at firſt apparently deſirous of biting, but ſoon becomes tame and even familiar, and may be kept in gardens, or even in houſes, with great ſafety. In this ſtate of domeſticity, it keeps generally at reſt during the day, and goes about at night; at which ſeaſon, owing to its eyes being conſtructed like thoſe of cats, it is more readily able to ſeize inſects, on which it chiefly feeds. When walking about, it is frequently ſeen to dart out its tongue, probably to catch ſmall flies.

It is very eaſily tamed, eſpecially when caught young, and is then both a beautiful and innocent animal. Brown relates *, that he kept a full grown guana in his houſe for more than two months: At firſt, it appeared fierce and miſchievous, but became gentle in a few days. It lay quiet on a bed for the moſt part during the day, but run about at night, and was never obſerved to

* Natural Hiſtory of Jamaica, p. 462.

Guana.

to eat any thing, but ſeemed to lap up ſmall particles floating in the air with its tongue, which were certainly minute inſects, darting out its tongue to catch theſe, while walking about, exactly like the chameleon.

The fleſh of the guana, according to Brown, is much eſteemed, and is even preferable, when fricaſſeed or otherwiſe properly dreſſed, to that of poultry; though it is ſaid to be hurtful to thoſe whoſe blood is in bad order, and M. de la Borde alledges that it is of difficult digeſtion. The fleſh of the females is reckoned more delicate and fatter than that of the males. They are even made an article of trade in the Bahama iſlands, being carried alive to Carolina, and other parts of America, where the fleſh is ſalted up for uſe *. M. de la Borde informs us, that in ſome iſlands, where the guana is ſcarce, it is reſerved for the tables of the rich. Hence we ought not to be ſurpriſed at the avidity with which this gentle and harmleſs animal is

* Cateſby, Nat. Hiſt. of Carolina.

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is ſought after, which never deſtroys any thing but uſeleſs leaves and flowers, or noxious inſects, which requires only the hole of a rock or ſome dry branches for its habitation, and which has been placed by nature as one of the greateſt ornaments of the foreſts. Mankind is more eager to deſtroy thoſe animals which are objects of luxury, and which may miniſter to his appetites, than to extirpate ſuch as are hurtful.

Concretions are ſometimes found within the body of the guana, ſimilar to thoſe already mentioned in the bodies of the tortoiſe, the crocodile, and the tupinambis, and reſembling the ſubſtances called bezoars, that are found in the bodies of viviparous quadrupeds, particularly ſuch as have been called occidental bezoars. M. Dombey brought one of theſe, from South America, to the Royal Cabinet. Its ſhape reſembles the half of an egg, ſomewhat hollowed at one end. It is formed of ſeveral poliſhed layers, compoſed of ſmall needle-like criſtallizations. One end is convex, and the other

Guana. other concave; but it muſt not be ſuppoſed a portion of a bezoar, which had formerly been larger, for its layers are regularly continued round the edges of the concave part, as well as on that which is convex. In all probability, the nucleus, around which it has criſtallized, has been nearly of the ſame form. The ſurface of the concave part is not poliſhed, like the reſt of its body, probably owing to being kept away from friction, by its figure. The larger diameter of this bezoar is fifteen lines, or twelfth parts of an inch, and the leſſer diameter fourteen.

In the collection of Seba, there were ſeveral of theſe bezoars from the guana, about the ſize of pigeons eggs, and of a cinereous yellow colour, with darker ſpots. They are called *beguan* by the Indians, who conſider them as more valuable than moſt other bezoars *. Theſe ſubſtances were probably known to the ancients, as the guana is found in India as well as in America: Though the particular ſpecies has not been

* Seba, Muſ. ii. 140.

been particularly marked either by Ariſtotle or Pliny, we may readily admit that it is ſpoken of under the general name of *Lacertus viridis* or green lizard, and that the ſubſtance mentioned by Pliny *, under the name of *Sauritin*, from *Saurus* a lizard, and deſcribed as a ſtone or concretion found in the body of a green lizard, was the bezoar of the guana, which, he ſays, was conſidered as very valuable, from having the properties of other bezoars falſely attributed to it. What ſeems to corroborate this opinion, is that the word Sauritin has never been applied, either by the ancients or moderns, to any other ſubſtance whatever. Guana.

The guana is very common in Surinam, in the woods of Guiana, in Cayenne, and in Mexico; but is ſcarce in the Weſt India iſlands, in conſequence of being much ſought after, on account of the excellence of its fleſh. It is likewiſe found in many parts of the Old World, both in Africa and Aſia. Dampier ſays that ſeveral guanas or

* Hiſtoria Naturalis, lib. xxxvii. chap. 67.

Guana.

or iguanas were ſeen near Seal Bay in New Holland, which ſtopped and hiſſed when any one came near them, but did not attempt to run away. It is every where confined to the torrid zone, being never found in any of the cold or even temperate regions. Its colours vary, according to its age and ſex, and in the ſeveral countries which it inhabits; but it is always very remarkable, and readily diſtinguiſhable from the other ſpecies of lizards, by its habits, by the peculiarity of its form, and by the beautiful enamel which adorns its ſcales.

ART. XIII. *THE HORNED LIZARD**.

Horned Lizard.

THIS lizard, which is found in St Domingo, reſembles the guana in many reſpects. It is nearly of the ſame ſize, and has the ſame proportions in the form and dimenſions of its body, legs, and tail. The head is flattened and ſomewhat hollowed at the top, like that of the guana, and has ſimilar

* Le Lezard cornu.

Horned Lizard.

ſimilar large pointed projecting tubercles at the ſides *. The ſcales of the back and of the root of the tail, form a projecting creſt or ridge, ſimilar to that of the guana. The teeth are divided into ſeveral ſmall points, at their edges, ſimilar to thoſe of large individuals of the guana ſpecies. This lizard differs from the guana in wanting the large creſted pouch under the throat. The diſtinguiſhing characteriſtic of the ſpecies is formed by a kind of conical horn, covered by a ſingle large ſcale, placed almoſt between the eyes, and having before it, between and the muzzle, four large projecting tubercles. This lizard, which was communicated to the Cabinet by M. l'Abbe Bonnaterre, is found in great numbers in St Domingo. It is here called the horned lizard, until farther obſervations have aſcertained, whether it ought to be conſidered as a diſtinct ſpecies, or only as a variety of the guana. At any rate, it will fall to be arranged in our ſecond diviſion, immediately after the guana.

* In one ſpecimen theſe large tubercles were wanting.

Art. XIV. *THE BASILISK* *.

Baſiliſk.

THIS name has been fabulouſly employed to indicate a terrible animal, ſometimes deſcribed as reſembling a ſerpent, and at other times like a ſmall dragon, or flying lizard, and which was ſaid to kill, even by the influence of its eyes. Nothing can poſſibly be more ridiculous than the ſtories which have been invented, with regard to this fabulous animal, to which ſuch marvellous properties have been attributed. The ſkin of a ſmall ſpecies of Ray, which is found in the Mediterranean, dried and twiſted into the ſtrange figure which has been erroneouſly attributed to the baſiliſk, is ſtill employed by itinerant

* Le Baſilic. Encyclop. Method.

Lacerta Baſiliſcus: Having a long round tail, with a rayed fin on the back; the hind head being creſted. Syſt. Nat. ed. Gmel. i. 1062. G. 122. ſp. 25.—Draco americana. Seba, Muſ. i. t. 100. f. 1.—Baſiliſcus americanus. Laurent. amphib. 50. n. 75.

nerant impoſters and charlatans, to impoſe on the ignorance and credulity of the people *. We ſhould not have retained the name, that has been ſo much abuſed, to the real animal of which we now treat, leaſt the exiſtence of a lizard under the appellation of baſiliſk, ſhould be conſidered as abſurd, from the fables which have been ſo long attached to the name, if theſe ſtories had not been as abſurd as they are ridiculous, and if we had not been perfectly ſatisfied, that theſe ſtories are now totally devoid of credit: Beſides, the name of baſiliſk has been adopted, for the lizard we are about to deſcribe, by all the naturaliſts who have mentioned the ſpecies. Baſiliſk.

The baſiliſk inhabits South America, and is one of the moſt eaſily diſtinguiſhed ſpecies of lizards, in conſequence of a very high creſted ridge of ſcales, in form of rays at ſome diſtance from each other, which extends from the top of the head to the tip of the tail. The head is likewiſe ſur-

* See the article Baſilic, in Bomares Dictionary of Natural Hiſtory.

Baſiliſk. mounted by a kind of hood, from which the name, which ſignifies a *little king*, is derived. This ſpecies ſometimes grows to the length of more than three feet, including the tail. The feet have all five diſtinct toes, unconnected by membranes. Like moſt lizards that have divided toes, it lives much in trees, being very active in climbing the branches, and graſping them with its long flexible toes. Beſides this property, which is common to many lizards, it is capable of extending the hood on its head, and the creſt along its back, ſo as to render its body proportionally lighter, and is thereby enabled to leap with great agility from one branch to another, ſo as even to ſeem capable in ſome degree of flying. Theſe membranes are likewiſe uſeful to it in ſwimming, and it ſometimes takes to the water.

The creſt, by which this ſpecies is diſtinguiſhed, ſeems to ſerve as a kind of defenſive weapon, as well as a remarkable ornament. So far from killing, merely by its looks, as is reported of the fabulous animal

of

of this name, it must be contemplated with pleasure, as adorning and animating the solitudes of the American forests; either when it shoots from branch to branch with astonishing rapidity and adroitness, or when, in its state of rest, tempering its natural vivacity, it evinces a kind of satisfaction in being observed, and, erecting its crown, it agitates its beautiful crest, alternately raises and depresses its head, and, by its various elegant movements, reflects various coloured lights from its polished scales. Basilisk.

ART. XV. *THE AMBOINA LIZARD* *.

WE have here used the trivial name of Amboina Lizard, following the Systema Naturæ, for a species which might have Amboina Lizard.

* Le Porte-crete. Encycl. Method.

Lacerta amboinensis: Having a long tail flattened laterally, with a radiated ridge on its upper surface; the back being provided with a dentated crest. Syst. Nat. ed. Gmel. i. 1064. G. 122. sp. 54. Schlosser, Epist. de Lacert. amboinens. Amsterd. 1768. t. 1.

Amboina Lizard.

have been called the creſted lizard, after Daubenton, in conſequence of a remarkable creſted ridge of ſcales, which extends from the head to the extremity of the tail. This creſt is uſually compoſed of ſeventy long and pointed ſcales on the back: At the root of the tail it is raiſed into a very long and broad fin, compoſed of fourteen or fifteen cartilaginous rays, armed at its upper edge with ſmall ſharp ſcales, which moſtly point backwards.

This ſpecies, which may be conſidered as the Aſiatic repreſentative of the American baſiliſk, is found in Amboina and Java, according to Hornſtedt and Schloſſer, who have firſt deſcribed it: It has likewiſe conſiderable affinity with the dragon, and the other lizards having compreſſed tails, and indented creſts on the back; its head being almoſt quadrangular, flattened on the top, and covered by tubercles and large ſcales. The eyes are large, and the orifices of the noſtrils project. The openings

Bin jawacok jangur eckor. Hornſtedt, in Nov. act. Stockh. vi. 2. p. 130. n. 5. t. 5. f. 1. 2.

Amboina Lizard.

ings of the ears are so large, as to discover the tympanum or drum of the ear. The underside of the head resembles a flattened pouch, much wrinkled, which has been called a collar by some writers. The tongue is thick, fleshy, and very slightly divided. The teeth are close set and pointed, and grow larger the farther they are placed backwards in the mouth; eight of the upper and six of the lower teeth, in front, being rounded, sharp pointed, turned obliquely outwards, and separated by a small interval on each side from the larger back teeth, which are compared to grinders *. In this circumstance of form and arrangement of the teeth, this species resembles the dragon already described.

All the five toes of the feet, both before and behind, have claws; and they are all edged on each side by a thin sharp serrated membrane. The tail is almost three times as long as the body. The head and the pouch or collar on its under side are green-

* Hornstedt, in Mem. Acad. Stockh. 1785. trim. iii. 130.

Amboina Lizard.

iſh, with white lines or ſtreaks. The creſt and back are tawny of different ſhades. The belly is whitiſh grey, and the ſides are marked with white blotches or large ſtreaks, which extend down the legs to the feet. In ſome individuals, according to Hornſtedt, the general colour is greeniſh with black ſtreaks, the belly being whitiſh. The male differs from the female, in having the creſt conſiderably higher, and by the colours being more lively.

This ſpecies is of conſiderable ſize, being ſometimes three or even four feet long. Beſides its teeth and claws, which are formidable weapons, its creſted back and the tail are both uſeful in defending it againſt enemies. Its feet are formed for climbing trees with great readineſs, and are admirably adapted for taking faſt hold of its prey. The tubercles and large ſcales, with which its head is covered, defend it very powerfully againſt injuries. From all theſe means of defence and of attack, one might very readily preſume that this ſpecies was voracious, and deſtructive to many of the

ſmaller

ſmaller animals: But its oppoſite diſpoſitions furniſh a ſtrong proof of the caution which ought to be preſerved, in forming a judgment on the general manners and habits of any animal, from particular features in its external form; for we are certain, that theſe diſpoſitions are very ſtrongly modified by the interior organization, and even by a combination of ſeveral local circumſtances of greater or leſſer permanency. Amboina Lizard.

This ſpecies inhabits the unfrequented banks of large rivers, living on ſmall worms, and climbs the trees in ſearch of fruits and ſeeds. It depoſits its eggs on ſand-banks and ſmall iſlands, as if anxious to place them out from the reach of danger. It is extremely timid, and flies at the ſmalleſt noiſe, without attempting any defence, throwing itſelf into the water to eſcape from danger, and making haſte to conceal itſelf under rocks and ſtones. It ſwims with great readineſs, being greatly aſſiſted by the elevated membrane on its tail.

Beſides giving it gentle and inoffenſive manners,

Amboina Lizard.

manners, the nature of the food of this ſpecies, which is chiefly fruits, renders its fleſh ſuperior in flavour, to that of other ſpecies which feed on groſſer nouriſhment. It is even conſidered as preferable in this reſpect to the guana; and this unfortunate excellence occaſions it to be much ſought after in the countries which it inhabits. It even allows itſelf to be taken by the hand, without the ſmalleſt reſiſtance, and without even any cry or ſign of diſtreſs. This tranquil derilection of life has been attributed by many to ſtupidity, when perhaps it is entirely owing to its mode of feeding, which, never giving occaſion for any exerciſe of its ſtrength or weapons, prevents it from knowing their power as a means of defence: But mankind has often fallen into a ſimilar error, contemning the leſs brilliant though infinitely more valuable qualities of peacefulneſs and innocence, while they applaud the oppoſite talents for war and deſtruction, which ought to be conſidered with horror and deteſtation.

ART.

ART. XVI. *THE KALOT**.

THIS ſpecies is diſtinguiſhed by having a ſerrated creſt, from the back of the head to the middle of its back, conſiſting of large, thin, pointed ſcales, at ſome little diſtance from each other; and ſome ſimilar ſcales appear on the lower and back part of the head, below the openings of the ears. But this toothed creſt does not reach to the extremity of the tail, nor is it found on the throat, as in the guana. All the other ſcales, by which the body Kalot.

* La Galéote. Encyclop. Method.—Galiote. Bomare, in voc. Called Ασκαλαβωτης, Σκαλαβωτης, Καλαβωτης, Καλωτης, and Οφιομαχος, by the ancients.

Lacerta Calotes: Having a very long round tail; the forepart of the back and hinder part of the head being ſerrated. Syſt. Nat. ed. Gmel. i. 1063. G. 122. ſp. 27. Amoen. Acad. i. 289. Muſ. ad. frid. i. 289. Edwards, glean. t. 245. f. 1. Seba, Muſ. i. t. 86. f. 6. t. 89. f. 2. t. 93. f. 2. t. 95. f. 3. 4.

Iguana Calotes. Laur. Amphib. 49. n. 73.—Iguana chalcidica. ditto 48. n. 69. Seb. Muſ. ii. t. 76. f. 5.

Kalot.

body and limbs of the kalot are covered, have a ſharply protuberant ridge, giving it the appearance of a vaſt number of longitudinal raiſed ſtreaks.

The head is flattened, and is very broad at its back part, having a good deal of reſemblance to that of a chameleon. The eyes and the openings of the ears are very large. The throat is ſomewhat ſwelled out, giving a ſlight reſemblance in this particular to the guana. The legs and toes are moderately long, the toes being completely ſeparated from each other, all of them having claws, the convex part of which are black. The tail is very ſlender, and exceeds three times the length of the body. In the individual which is preſerved in the Royal Cabinet, and from which this deſcription is taken, the body meaſures three inches and ten lines in length, from the tip of the muzzle to the anus, and the tail is fourteen inches long. For the moſt part the back is light azure blue, and the belly whitiſh.

This ſpecies is found in the warm countries

tries of Aſia, particularly in Ceylon, and Arabia *. It runs about in the houſes, and on the roofs, in ſearch of ſpiders. It has even been alledged, that it makes war on a ſmall kind of rats, which it is ſtrong enough to overcome: The ſharp ridged ſcales with which its head and body are covered, and the ſerrated ridge of pointed ſcales on its back, may both aſſiſt in defending it againſt the teeth of ſuch animals. The length and perfect diviſion of its toes, gives it great facility for climbing among the beams on the roofs of houſes in ſearch either of rats or ſpiders. It is likewiſe ſaid to fight ſmall ſerpents, from which circumſtance one of its Greek names is derived, and it attacks the green lizard and ſeveral other ſpecies of this genus. Kalot.

ART.

* In the original Spain is added, but as that cannot be conſidered as a hot country, neither is it in Aſia; it has been ſuppoſed a miſtake of the printing, and is therefore here omitted in the text.—T.

ART. XVII. *THE AGAMA* *.

Agama.

THIS ſpecies, which has conſiderable reſemblance in many reſpects to the kalot, is found in America. The hind part of the head, and the upper part of the neck are garniſhed with pointed reverſed ſcales. The ſcales on the upper part of the body, and eſpecially thoſe on the tail, are raiſed into a ridge, and terminate in a kind of ſpine, which gives the tail an angular appearance, it being in other reſpects very long and ſlender. On the fore part of the back, there is a creſt of ſtraight flat and ſharp ſcales. The under part of the mouth,

* L'Agame. Encyclop. Method.

Lacerta Agama: Having a long round tail; the back of the head and top of the neck being creſted, the ſcales on the hind head being reverſed. Syſt. Nat. ed. Gmel. i. 1064. G. 122. ſp. 28. Amoen. Acad. i. 288. Muſ. ad. frid. i. 44. Coronov. Zooph. 13. n. 54.

Iguana Cordylina. Laur. Amph. 47. n. 67. Seb. Muſ. i. t. 107. f. 1. 2.—Iguana Salamandrina. Laur. Amph. 48. n. 68. Seb. Muſ. i. t. 107. f. 3.

mouth, below the under jaw, is covered by a looſe ſkin, in form of a dewlap. It is diſtinguiſhable from the kalot, by its colours being paler, and the belly having fewer ſtreaks; and particularly by the ſcales on the hind part of the head being reverſed, with their points ſtanding forwards. The chief difference between the male and the female conſiſts in the ſcales, which form the creſt of the former, being larger, and thoſe on the back being longer. There are no ſpinous ridges on the ſides of the neck in the female, but very ſmall ſpines are found all along the ſides of the body, and thoſe which defend the tail and the fore parts of the back are ſharper than in the male. According to Seba, this ſpecies is fond of the water. Agama.

The cinereous green lizard repreſented by Sloane, vol. ii. plate 273. fig. 2. the fifth ſpecies of lizard, which Brown ſays is very common in Jamaica *, and the blue lizard of Edwards †, are all probably

* Natural Hiſtory of Jamaica, p. 463.

† Gleanings of Natural Hiſtory, p. 75. plate 245.

Agama. bly to be conſidered as varieties of this ſpecies.

That deſcribed by Sloane is of a cinereous green colour, having a ſhort creſt on the back. It is found in great numbers in the woods of Jamaica, and differs little from the guana, but is ſmaller, of a fuller green colour, and the creſt on its back is ſhorter. Its eggs are ſmaller than thoſe of pigeons.

The lizard, which Brown enumerates as his fifth ſpecies, is green, and its tail has a creſt or ridge of erect ſcales. It is very common in Jamaica; and is uſually of a beautiful green, but the colour changes according to the ſituation of the animal, like ſeveral other ſpecies of this genus; this changeableneſs is even more remarkable than in moſt other lizards, and it more readily acquires the hues of ſuch ſubſtances as it is affected by. The body is covered by ſlight ſcales; thoſe which are on the upper ſurface of the tail being erected, and forming a ſmall creſt, ſomewhat like that of the guana. Its diſpoſitions are very gentle, and it ſeldom exceeds nine or ten inches long.

The

Guana.

The blue lizard of Edwards is very ſingular in the ſtructure of its toes: Theſe are edged on each ſide by a kind of membranes, that are very unlike thoſe on the feet of certain aquatic birds, having more reſemblance to the feet of ſome kinds of flies, that act in ſome degree by ſucking; they ſeem intended to enable the animal to walk on the ſmooth ſurfaces of the large leaves of trees and other plants. There is a ſmall elevated ridge along the whole back, as far as the tail, where it becomes ſerrated. The whole upper part of the body is bluiſh, tranſverſely variegated with lighter and darker ſhades. The under parts of the body are of a very pale fleſh colour.

The individual deſcribed by Edwards, was ſent from the iſland of Nevis in the Weſt Indies, preſerved in ſpirit of wine; and had probably changed its natural green colour to blue, in conſequence of the action of the ſpirits, as ſuch a change is very often produced in green lizards by the ſame means.

III. DIVISION.

OF LIZARDS,

Having round Tails, five Toes on each of the fore Feet, and bands or fillets of ſcales on the Belly.

ART. XVIII. *THE NIMBLE LIZARD**.

Nimble Lizard.

THIS elegant ſmall ſpecies, which is known, as the plaything of youth, to almoſt every perſon in the temperate regions

* Le Lezard gris. Encycl. Method.—Lezard gris, ordinaire, ou commune. Lacerta terreſtris. Bomare, in voc.—Langrola, in Provence.—Lagartija, or Sargantana, in Spain.

Lacerta Agilis: Having a longiſh round tail, ſurrounded by rings of ſharp ſcales; and having a kind of collar underneath the neck, compoſed of ſcales. Syſt. Nat.

gions of Europe, ſeems to be the moſt gentle and inoffenſive, and, at the ſame time, the moſt uſeful of all the lizard tribe. Though its colours are not ſo brilliant as thoſe of ſeveral other oviparous quadrupeds, its covering is, however, very elegant, and its ſmall ſize is very engaging. Its motions are ſo nimble, and it runs with ſuch ſwiftneſs, as to diſappear as quickly as a bird in the moſt rapid flight. It is fond of baſking in the ſun; yet, unable to bear exceſſive heat, it ſeeks ſhelter in the hotteſt weather. In ſpring, during fine weather, it is often ſeen luxuriouſly extended on a ſloping green bank, or on a wall expoſed

Nimble Lizard.

Nat. ed. Gmel. i. 1070. G. 122. ſp. 15. Faun. ſuec. 284. & i. n. 1352. Syſt. Nat. ed. x. i. 36. n. 6. Muſ. ad. frid. i. 43. Gronov. Muſ. ii. 80. n. 57. Seb. Muſ. ii. t. 79. f. 5. Ichthyol. cum amphib. boruſ.

Lacertus vulgaris. Raj. quad. 264.

Seps ſericeus, n. 104. Seps argus, n. 105. Seps muralis, n. 106. Seps terreſtris, n. 107. Seps caeruleſcens, n. 109. Laurent. amphib. p. 61. & ſequ.

As this ſpecies is ſubject to great variety in colour, the trivial name given by Linnaeus has been here preferred to that in the original French of this work.—T.

Nimble Lizard.

to the ſun, which, by reflecting its rays, augments the natural warmth of the ſeaſon. In this ſituation, it enjoys the full effects of the reviving heat; expreſſing its delight by gently agitating its ſlender tail; and its lively eyes are animated with pleaſure. Should any of the minute animals appear on which it feeds, it ſprings upon them with the quickneſs of thought; and if any danger occur, it ſeeks a more ſecure retreat with equal rapidity. Far from flying the approach of man, it ſeems to eye him with ſatisfaction; but on the ſmalleſt noiſe, even the falling of a ſingle leaf, it turns ſuddenly round, falls down, and ſeems for ſome inſtants perfectly ſtupified by its fall; or, it ſuddenly ſhoots away and diſappears, returns again, ſeems agitated, conceals itſelf again, returns, deſcribes ſeveral circuitous contortions ſo rapidly as hardly to be followed by the cleareſt eye, and finally retires into its concealment until its terror is removed. This wonderful agility and rapidity of motion is chiefly to be ſeen in the warm countries, for in more temperate

rate regions its evolutions are greatly more languid. Nimble Lizard.

The head of this ſpecies is triangular, and flattened on the top; its upper part being covered by large ſcales, of which two are placed in ſuch a manner over the eyes as to reſemble ſhut eyelids. Its muzzle is ſmall, elegant, and of a rounded form. The openings of the ears are tolerably large. The two jaws are of equal ſize and length, and are covered on the outſide by large ſcales, being armed with very ſmall hooked teeth, having their points turned inwards. All the feet have five ſlender toes on each, furniſhed with hooked claws, which aſſiſt it in climbing trees, and in running nimbly along the ſurface of walls: And, having the hind legs ſomewhat longer than the fore, as in moſt lizards, it is thereby greatly aſſiſted in the agility of its motions, even in running up walls and trees. There is a ſmall ſtring or row of tubercles along the inſide of each thigh, ſimilar to what has been already remarked in the guana; the

Nimble Lizard.

number of these is variable, being sometimes as far as twenty on each thigh.

The whole figure and appearance of this small lizard is delicate and agreeable. The grey colour, which for the most part adorns its upper parts, is variegated by a great number of whitish blotches, and by three longitudinal stripes along the back, almost completely black, that in the middle being narrower than the rest. The belly is green, changing with blue. There is no part of its external scaly covering but exhibits an agreeable appearance of mild but changing reflections of coloured light; and, to give additional beauty to this elegant simplicity of its natural dress, the under part of the neck is adorned with a double collar, usually composed of seven scales, somewhat larger than those on the rest of the body, particularly than those immediately contiguous; and these have the colour and brilliancy of burnished gold. In other respects, as in almost all lizards, the distribution and shades of colours in this species are subject to considerable variation, according to differences

ferences in age, ſex, and climate; but, ſo far as can be judged of, by the inſpection of many living ſpecimens, the general colour is always ſuch as has been above deſcribed. The belly is covered by ſcales of conſiderably larger ſize than thoſe on the upper parts of the body; which ſcales are of a quadrangular figure, and are ranged in tranſverſe bands or fillets; and this circumſtance forms a peculiar character in the ſubdiviſion of the genus in which this ſpecies is placed. Nimble Lizard.

This ſpecies is uſually five or ſix inches long, by about half an inch broad, forming a ſtriking contraſt with the enormous ſize of the crocodile. That immenſe oviparous quadruped is hardly ever ſeen without terrour, but the nimble lizard we are now deſcribing, while ſporting innocently among the flowers, gives pleaſure by the beauty and harmleſs nature of its appearance, and, by the agility of all its motions, ſeems fully entitled to the trivial name that is here borrowed from the Syſtem of Nature of the immortal Linnæus. This gentle and peaceful

Nimble Lizard.

little animal excites no ſenſations of fear; it eſcapes indeed, for the moſt part, when any one endeavours to take hold of it; but, when taken, it makes not the ſmalleſt attempt to bite or offend. Children uſe it as a plaything; and, in conſequence of its natural gentleneſs of diſpoſitions, it even becomes familiar. It ſeems anxious to return the careſſes which are beſtowed on it; innocently approaching its mouth to the mouths of thoſe who fondle it, and eagerly ſucks their ſpittle. The ancients have given it a name, which ſignifies the friend of man, but it merits more juſtly the title of friend of youth: Yet young people, often ungrateful, or at leaſt inconſtant, do not always repay with friendſhip the attachment this gentle creature ſeems to beſtow. They often mutilate its extremities by their rudeneſs, particularly its tail, which is extremely brittle, owing to the weakneſs of its vertebræ.

The tail is nearly twice the length of its body, and tapers from its root to the extremity, where it ends in a point. It is blotch-

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ed or ſpotted with white and a moderately deep black, being ſurrounded by numerous diſtinct rings of ſcales, often as far as eighty circles, that lap over each other downwards. When this tail has been broken off by any accident, it is ſometimes reproduced: And even when it has been ſplit, or divided lengthways, it is occaſionally replaced by two or even three tails; of which one only contains vertebræ, and the reſt have only a kind of tendon in the center *. Nimble Lizard.

'M. Marchand † has obſerved, that this 'ſpecies has ſometimes two tails; and this 'obſervation has been made by Pliny and 'ſeveral other writers long ago. Such in-'ſtances are ſometimes met with in Portu-'gal; but, as it is very common to ſee this 'animal tormented in a variety of manners 'by children, it is extremely probable, that, 'having ſplit the tail lengthways, each of 'the portions rounded itſelf in healing, and thus

* Continuation of the Mater. Medic. by Geoffrey, xii. 78.

† Memoir, by M. Marchand, in the Mem. de l'Acad. des Sciences, for 1718.

Nimble Lizard.

'thus each became an apparently complete 'tail. This apparent reproduction of a part 'of the circumference of the divided portions is not to be wondered at; for it is 'very common, when a part, or even the 'whole of the tail, has been loſt by any 'accident, to ſee it reproduced by a new 'growth. Numerous examples of this fact 'are continually occurring, as they are extremely liable to ſuch a loſs, even when 'ſporting together; becauſe the ſmall vertebræ or joints, of which their tails are 'compoſed, are exceſſively brittle, and eaſily ſeparate from each other by the ſlightеſt degree of violence. Hence it is very 'common to find lizards having tails of 'various lengths, while naturally their tails 'have always a certain fixed proportion. 'According to M. Marchand, the new or 'reproduced tail is only ſupported by a 'kind of central tendon, inſtead of the cartilaginous vertebræ which naturally belong to this member. The ſame naturaliſt ſays, that he had endeavoured to try 'this fact experimentally, but that it had

'never

Nimble Lizard.

'never succeeded in any of his trials, and 'that he could not discover the cause of 'his failure *.'

Snuff, or the powder of tobacco, is an almost certain poison for this species. When that substance is put into its mouth, it falls almost instantly into convulsions, and generally dies very soon after. As useful as it is agreeable in its appearance, this species would become infinitely more salutary to mankind, if it were more numerous. It feeds on flies, crickets, grasshoppers, earth-worms, and almost all those insects and worms that destroy our fruits and grains. Hence the more it multiplies, the more the enemies of our fields and gardens must be diminished. Were this the case, we should then have some reason to look on it, as is done by certain savage nations, as a fortunate omen, and the harbinger of prosperous events.

On purpose to seize the insects on which it feeds, it darts out, with astonishing velocity,

* New Observations with the Microscope, by Needham, p. 141.

Nimble Lizard.

city, a large forked tongue, of a reddiſh colour, which is beſet with aſperities, that are ſcarcely ſenſible to the ſight, but which aſſiſt greatly in catching its winged prey. Like moſt other oviparous quadrupeds, it is capable of exiſting a long time without food; ſome having been kept for ſix months in bottles, without the ſmalleſt nouriſhment, and at the ſame time without voiding any excrement *.

In the ſouthern countries of Europe, the nimble lizard revives very early in ſpring from the torpid ſtate in which it had paſſed the cold weather of winter; and, recovering its activity, begins its ſportive evolutions, which increaſe in agility in proportion to the heat of the atmoſphere. About the end of April, the two ſexes unite in ſuch cloſe embraces, that it is difficult to diſtinguiſh them from each other; and, if love is to be appretiated by the vivacity of its expreſſion, this ſpecies muſt be conſidered as one of the moſt ardent of the oviparous race. The eggs, which are almoſt round,

* Seba, Muſ. ii. 84.

round, and seldom above five lines in diameter, are carefully placed by the female in very warm situations, such, for instance, as the foot of a wall fronting the south; and, being layed in the warm season, are hatched entirely by the heat of the sun and atmosphere. Nimble Lizard.

Before the commencement of the sexual intercourse, this species, like almost all other lizards, changes its skin; and then, in its new dress, joins in satisfying the reproductive appetite. It changes its skin a second time, about the beginning of winter, and passes that season in a state of torpor, more or less complete, according to the rigour of the season, either in holes of trees or of walls, or in subterraneous places, and again quits these melancholy retreats, at the first appearance of the genial warmth of spring.

This little animal seems occasionally to lay aside the gentleness and innocence of disposition which is generally attributed to it. Mr Edwards * mentions his having once surprised one of them in the act of attacking

* Gleanings of Natural History, chap. xv.

Nimble Lizard.

attacking a ſmall bird, while ſitting on its newly-hatched young, in a neſt that was built againſt a wall. The approach of that naturaliſt put a ſtop to the combat, which the bird ſuſtained in defence of its little ones: The bird flew away, and the lizard allowed itſelf to fall down; while, perhaps, but for the intervention of Mr Edwards, it would have devoured the young birds, if it had ſucceeded in dragging them from the neſt. We ought not, however, raſhly to conclude, from this inſtance, either of individual defect, or perhaps of neceſſity from accidental circumſtances, that the ſpecies, otherwiſe ſo weak, ſo gentle, and ſo inoffenſive, is poſſeſſed of miſchievous propenſities.

This ſpecies has been much praiſed as a remedy in ſeveral diſorders, particularly thoſe which affect the ſkin, in cancers, and other diſeaſes that require to have the blood purified. The practice is ſaid to have been ſucceſsful in the environs of Madrid; and the Pariſian ſociety of medicine, having received ſpecimens from the Spaniſh phyſicians,

Nimble Kizard.

ſicians, had them examined by MM. Daubenton and Maduit, who report that they differ in nothing from the common nimble lizards of France, except in thoſe ſlight ſhades of colour, that are almoſt a neceſſary conſequence of the diverſity of climate between Spain and France *.

The ſmall lizard deſcribed by Pallas in the Latin ſupplement to his Ruſſian travels, under the name of lacerta velox, or ſwift lizard, ſeems only a variety of this ſpecies. It has the ſame general figure of its body and tail; having ſimilar ſcales under the throat, arranged in form of a collar, and ſimilar rows of tubercles on the inſide of its thighs. It is of a cinereous colour, longitudinally ſtreaked with paler; the back is marked with ſmall reddiſh brown dots, the ſides being marked with bluiſh dots and ſome black ſpots. This animal was found among rocks and ſtones, in very warm deſert places, in the neighbourhood

* Hiſt. de la Société Royale de Médecine, for the years 1780 and 1781.

Nimble Lizard.

bourhood of lake Inderſkoi; and its motions were as quick as an arrow *.

The following obſervation, on the viviparous nature of this ſpecies, was communicated by M. de Sept-fontaines, a very aſſiduous cultivator of natural hiſtory. On the 17th of July 1783, he opened a female, and twelve completely formed young lizards, from eleven to thirteen lines long, were found within her body: Five of theſe were wounded by the knife, and hardly ſhowed any ſigns of life; but the other ſeven inſtantly ran about as nimbly as the moſt advanced lizards of the ſpecies. This gentleman tranſmitted a ſpecimen of the ſame kind with that on which his experiment was made; and, on the moſt attentive obſervation, it was not found to differ in the ſmalleſt

* Lacerta Velox: Having a longiſh round tail, ſurrounded by rings of ſcales; with a collar of ſcales on the under ſide of the neck; the body having five longitudinal pale ſtreaks, with brown dots on the back, and black ſpots and bluiſh dots on the ſides. Syſt. Nat. ed. Gmel. i. 1072. G. 122. ſp. 63. Pall. it. 1. 457. n. 12.

Archer Sculpt

1. Green Lizard - 2. Ameiva. p. 210.

ſmalleſt degree from the ordinary lizard of this article. Thus we find, that the nimble lizard, which commonly depoſits its eggs in ſheltered places, to be hatched by the warmth of the atmoſphere, becomes ſometimes viviparous, the eggs being, in certain circumſtances, hatched within the belly of the mother. We ſhall hereafter have occaſion to notice a ſimilar fact, in the natural hiſtory of the land newt. Nimble Lizard.

ART. XIX. *THE GREEN LIZARD* *.

IN the formation of the green lizard, Nature ſeems to have employed the ſame proportions as in the foregoing ſpecies, but upon Green Lizard.

* Lezard vert. Encycl. Method.—Lazer, near Montpellier.—Lagarto and Fardacho, in Spain.—Krauthun, at Vienna.—Σαυρος and Χερσος, in Greek.

Lacertus viridis. Aldrov. quadr. 634. Geſner, quad. ovip. 35. Ray, ſynopſ. 264.—Lacerta viridis. Seb. Muſ. ii. t. 4. f. 4. 5. Ichthyol. boruſs. Edwards, glean. t. 247. f. 2. Roeſel, hiſt. ran. noſtr. in frontiſp.—Seps varius, n. 110. Seps viridis. n. 111. Laurent. amphib. p. 62. & ſequ.

Green Lizard.

upon a larger ſcale. The green ſpecies reſembles the nimble lizard in every thing, except in being conſiderably larger, and in having much more lively colours. The colouring of this ſpecies is ſeen, in its greateſt brilliancy, about the beginning of ſpring; when, after having thrown off its old covering, it expoſes its new ſkin, with all its lively enamelled ſcales, to the genial warmth of the ſuns rays, which, playing on the ſcales, gild them with undulating reflections. Their natural colour has all the luſtre of the emerald; and, though without the ſame tranſparency, that want is compenſated by the added beauty of the azure ſky, which is painted by reflection on their ſhining and poliſhed ſurfaces. The eye is never wearied by the delightful green with which its ſkin is adorned; it fills the eye

Though Linnæus has arranged the green lizard only as a variety of the nimble ſpecies, the great difference between theſe two animals in ſize, and ſeveral obſervations which we have made on both of them while alive, convince us that they ought to be ſeparated.—Note, by M. de la Cepede.

eye with its luſtre, but without dazzling; and is equally agreeable by its ſoftneſs, as it is beautiful by the elegance of its reflected lights. It ſeems to mix with the ſurrounding air, ſoftening away by gentle ſhades, ſo as never to offend by over brilliancy, but always pleaſes by an agreeable variety: Being equally delightful, whether it reflects the full glare of ſun-ſhine, or emits the more feeble ray of the evening, it continually preſents to us the moſt delicate ſweetneſs in its tints. Green Lizard.

The upper parts of the body are of a beautiful green, more or leſs variegated with yellow, grey, brown, and even ſometimes with red; the under parts being always more of a whitiſh colour. The colours of this ſpecies are ſubject to variety, becoming pale at certain ſeaſons of the year, and more particularly after the death of the animal; and it is chiefly in the warm countries that it ſhines in all its ſuperb ornaments, like gold and precious ſtones. In theſe regions it grows to a larger ſize than in more temperate countries,

Green Lizard.

being ſometimes found thirty inches in length. The ſpecimen from which the preſent deſcription was formed, was ſent from Provence to the Royal Cabinet, and meaſures twenty inches, including the tail, which almoſt equals the length of the head and body. The diameter of its body is two inches at the thickeſt part. The upper part of the head, as in the nimble lizard, is covered by large ſcales, regularly arranged at each others ſides. The edges of the jaws are adorned by a double row of large ſcales. The openings of the ears are oval, the long diameter being four lines, and the tympanum is diſtinctly perceived. The kind of half collar under the throat reſembles that of the nimble lizard, being formed of large ſcales, which were eleven in number in our ſpecimen. The ſcales on the back are the ſmalleſt, being of a hexagonal figure; but the angles are ſo little diſtinct as to make them ſeem round. The ſcales on the belly are large, and in form of lengthened hexagons, forming thirty half rings or tranſverſe bands. A row of thirteen tubercles extend

along

Green Lizard.

along the inside of each thigh: These are hollow; and a small perforated nipple appears distinctly on the middle of each, rising a little above the edge of the little cavity of the tubercle from which it projects *. The transverse furrow at the extremity of the under part of the body, which forms the anus, reaches almost completely across. The tail, which begins immediately below this furrow, diminishes gradually in size from its origin to its extremity, where it ends in a point. It is covered by scales, which are longer than they are broad, and which are larger than those on the back, being arranged in circular rings, usually to the number of ninety.

The beauty of the green lizard draws the attention of every beholder; and the animal seems to repay the compliment, by a similar attention on its part. Whenever it sees a man, it seems to observe him with respect, and to feel pleasure in displaying the brilliance of its eyes and of its golden scales;

* See the Works of M. Duvernay on this subject.

Green Lizard.

as, in our gardens, the peacock proudly expands the whole finery of his enamelled plumage. The green lizards play with children, in the same manner with the nimble species; but, when in confinement, they may be excited to fight, and then bite each other with great fury *.

Being stronger than the nimble lizard, this species sometimes fights with serpents; but is very rarely successful, generally falling a victim to the unequal combat. When it sees a serpent approaching, it is extremely agitated with fear, and makes a great noise and bustle. Some people, inclined to interpret every thing favourably in the character of so beautiful an animal, have considered these indications of fear as marks of attention and attachment to mankind, as if it meant thereby to give notice of the dangerous neighbourhood of the serpent. It feeds on earth-worms and insects, and swallows spittle with great avidity. Gesner relates, that he has seen a green lizard drink the urine of a child. It likewise eats the eggs

* Gesner, de Quadrup. Ovip. 36.

eggs of ſmall birds; for which purpoſe it climbs the higheſt branches of trees with great agility. Green Lizard.

Though lower on its legs in proportion than the nimble lizard, it runs very ſwiftly; and its firſt motions, when it ſprings from among buſhes or dry leaves, are often ſo rapid as to excite ſenſations of ſurpriſe, or even of fear. It leaps very high, and with great force. Being ſtronger, it is likewiſe braver than the nimble lizard; and even defends itſelf, when attacked, againſt dogs. Being accuſtomed to fix upon the noſtrils of ſerpents, with different kinds of which it is often forced to engage, it flies inſtantly at the muzzle of dogs, and fixes itſelf ſo obſtinately, that it allows itſelf to be carried off, and even killed, rather than quit its hold. It is not, however, to be conſidered as dangerous, at leaſt in the temperate regions, though ſome people have falſely attributed to it the property of giving mortal or at leaſt dangerous bites.

M. Laurenti relates the following facts on this ſubject, having employed what he

Green Lizard.

names the *Seps Varius*, which is only a variety of the green lizard, in his experiments. 'A lizard, having ſeized a ſmall bird by the 'throat, not only wounded it, but had al- 'moſt ſtifled it by the violence of its gripe; 'the wound ſoon healed, and the bird was 'ſo well next day as to ſing as uſual. The 'ſame lizard bit a pigeon with great vio- 'lence, ſo that the blood flowed from all 'the wounds given by its ſharp teeth; the 'pigeon did not die, but it ſeemed a good 'deal diſordered for ſome hours. Next day 'it bit the ſame pigeon on the thigh, and 'even carried away part of the ſkin, ma- 'king a wound of conſiderable ſize; the 'wound ſoon healed, and ſkinned over in 'a few days. Having removed part of the 'ſkin from the thigh of a dog and a cat, 'M. Laurenti cauſed the ſame lizard to 'bite them both in the wounded part, ſo 'as to make its foam or ſaliva enter the 'wound; both of theſe animals gave in- 'dications of pain, and tried to eſcape, but 'they ſhewed no other marks of injury; 'and their wounds being ſewed up, were

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'ſoon healed. An ordinary green lizard bit a pigeon on the thigh, with ſo much violence as to remove the ſkin, and then faſtened on the naked muſcles ſo forcibly as to be removed with difficulty; the wound was ſewed up, and the pigeon got ſoon well, after limping for a day or two. The ſame lizard bit a young dog on the belly; the wound did not bleed, but the dog cried violently; it did not, however, appear to ſuffer any other inconvenience *.' Green Lizard.

The manners of this green lizard are in moſt reſpects extremely ſimilar to thoſe of the nimble lizard: Its eggs are for the moſt part ſomewhat larger than thoſe of that former ſpecies, and they are hatched in the ſame manner, by expoſure to the heat of the ſun and air.

The inhabitants of Africa eat the fleſh of this ſpecies †. The green lizard is by no means confined to the warmeſt countries of both continents; it is found likewiſe

* Laurenti, ſpecimen Medicum. Vindobonae, 1768.

† Geſner, de Quadruped. Ovip. 37.

Green Lizard.

wiſe in the temperate regions, though it is there ſmaller and leſs numerous *. It is not even unknown in Sweden †, and in Kamtſchatka; and in both countries, in ſpite of its beautiful appearance, it is looked on by the inhabitants with horror, from ſome ſtrange ſuperſtitious prejudice. The Kamtſhadales conſider them as ſent by the infernal deities, and are anxious to cut them to pieces wherever they meet with them ‡; and ſhould one of theſe animals eſcape, they are ſo terrified for the malevolent power of theſe divinities, that they ever after expect death, almoſt every moment, and are ſometimes ſaid to die by the ſtrength of their terror.

A variety of the green lizard is found in the neighbourhood of Paris, which is diſtinguiſhed by a particular ſtripe from the ſummit of the head to the tip of the tail, extending to a little above the inſertion of the legs, eſpecially the hinder ones. This ſtripe is of a browniſh grey colour, ſpotted with

* Ray, Synopſ. 264.

† Linnaei, Fauna ſuecica.

‡ Cooks third voyage.

with deep brown, dotted all over with yellow, and edged on each ſide by a narrow whitiſh line. We have examined two living individuals of this variety, which appeared both very young, and they were almoſt as large as a full grown nimble lizard. Green Lizard.

The green lizard gets the name of *Stellion* in Italy, which name is likewiſe given in that country to the land-newt: In both, the appellation ariſes from a number of coloured ſpots, more or leſs bright, that are ſcattered over the upper part of the body in both animals, which are ſuppoſed to reſemble ſtars. But in this work we have reſerved that name, following Linnaeus, and moſt other naturaliſts, for a very different ſpecies of lizard that is found in Africa. In Kirchers muſeum of natural hiſtory, publiſhed at Rome in 1773, there is a deſcription and figure of a lizard caught in a wood on the Alps, and called the Italian ſtellion, which ſeems only a variety of this green lizard.

We may take notice in this place of an American lizard, mentioned by Cateſby *, which

* Lacertus viridis Carolinenſis. Cateſby, Natural Hiſtory

Green Lizard.

which has ſome reſemblance to the green ſpecies: It is called, by that writer, the Carolina green lizard; but Rochefort, and Ray after his example, give it the name of *Gobe-mouche*, or fly-catcher. This beautiful ſpecies or variety ſcarcely exceeds five inches long, and ſome individuals, eſpecially the females, are only about the length and ſize of a finger. Though ſo much inferior to the green lizard in ſize, it equals that animal in beauty. Moſt of theſe lizards are of a very bright green colour; ſome appear as if adorned with gold and ſilver; and others are of a golden green, or are ornamented with various brilliant and agreeable colours. Theſe animals are extremely uſeful in the houſes, by deſtroying flies, and other troubleſome or noxious inſects. It is hardly credible with what induſtry, agility, and dexterity they follow and ſeize their prey. They will ſometimes remain motionleſs for half a day, waiting for the inſects on which they

Hiſtory of Carolina, ii. 65.—This ſeems the ſame with the gobe-mouche, called Oulla-ouna by the Caribs. Rochefort, Hiſt. des Atilles. Ray, Synopſ. 269. Bomare, Dict. in voc.

Green Lizard.

they feed; and, when one appears, they ſpring at it with the ſwiftneſs of an arrow, even from the tops of high trees, on which they climb with great agility. Their eggs are about the ſize of peas, which the female covers ſlightly with earth, and leaves them to be hatched by the heat of the ſun. They are ſo familiar as to enter the rooms of the houſes without fear, and will mount on the tables, while people are employed at their meals, in ſearch of inſects, and leap after them even on peoples clothes; yet are they ſo cleanly and ſo pretty, that they are allowed to run over the plates and on the meat, without producing the ſmalleſt diſguſt. This little animal has every quality that can delight the eye, or intereſt the beholder in its favour: It is beautiful, active, uſeful, patient, and induſtrious; it is however extremely delicate, and never appears except during ſummer, at leaſt in latitudes even but little diſtant from the tropic. In theſe countries it remains all winter in holes of rocks or of trees. Sometimes a hot day in winter awakens it from the ſtate of torpor,

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Green Lizard.

ſo much as to make it venture out of its retreat; but as, on theſe occaſions, the cold returns ſuddenly, it is often unable to regain its hole, and dies with cold. Though very nimble, it finds great difficulty in evading the purſuit of cats and birds of prey. Its ſkin is ſo delicate as hardly to conceal the internal changes to which it is ſubject; for it changes colour, like the chameleon, according to its ſtate of health or activity, or, more properly ſpeaking, according to the temperature of the air. In a hot day it is of a bright green colour; and, if the next day be cold, its colour is then of a brown hue. The freſhneſs of its colour diſappears after death, when its ſkin becomes pale and livid.

The colours of ſeveral other lizards are apt to change and become pale, from ſimilar cauſes, which circumſtance has occaſioned a good deal of contradiction in the deſcriptions of naturaliſts, who have laid too much ſtreſs on the colours of oviparous quadrupeds, and have thereby occaſioned conſiderable confuſion in the nomenclature of

Green Lizard.

of this claſs. There are ſeveral coincidences between the habits of this fly-catcher, or Carolina lizard, and another ſmall American ſpecies, which has been called the *Anolis*, which name has likewiſe been applied to ſeveral other lizards. The circumſtances related concerning this anolis, ſhall be mentioned in the article appropriated to the ſtrumous lizard; and, as we have never ſeen the fly-catcher, it is not impoſſible but it ought likewiſe to be referred to the ſtrumous ſpecies, inſtead of conſidering it as a variety of the green lizard.

M. Cetti, in his Natural Hiſtory of the Fiſhes and Amphibious Animals of Sardinia, mentions a green lizard as very common in that iſland, where it is called Tiliguerta and Caliſcertula. It neither exactly reſembles the green lizard of this article, nor the ameiva, which will be deſcribed in one of the following articles. M. Cetti is diſpoſed to conſider it as a new ſpecies, ſomewhat intermediate between the ameiva and the green lizard. From the account, however, that is given of it by that naturaliſt, we would

Green Lizard.

would be inclined to consider it as a variety of the green lizard, if it has the half collar on the under part of its neck, or as a variety of Ameiva, if that circumstance be wanting. The account given by M. Cetti is as follows.

'The inhabitants of Sardinia give the 'name of Tiliguerta * and Calisertula, to 'a species of lizard which appears allied to 'the green lizard, as it is of a bright green 'colour, ornamented, however, with black 'spots, and longitudinal black streaks on 'the back. The insides of the thighs have 'each a row of tubercles, similar to those 'on the green lizard. All the feet have 'five toes, all of which are armed with 'claws. What distinguishes it remark-'ably from the green lizard is, that all 'naturalists have described the tail of that 'species only as equalling the length of 'its

* Lacerta Tiliguerta—Having the tail surrounded by rings of scales, and twice the length of the body; the belly being covered by eighty four-cornered scales. Syst. Nat. ed. Gmel. 1. 1070. G. 122. sp. 62. Cett. Anfib. Sard. 15.

Green Lizard.

'of its body, while the tail of the tiliguer-
'ta is always twice the length of its body
'and head. But it is certain that lizards
'have a very remarkable property of repro-
'ducing their tails; for if one of their tails be
'loſt by accident or deſign, it grows again;
'and if it be divided, each part ſoon be-
'comes a new tail. Hence it is not im-
'poſſible, but the great length of tail in
'the tiliguerta, above that in the ordinary
'green lizard, may not be a ſufficient indi-
'cation of a diſtinct ſpecies, but may pro-
'ceed entirely from the influence of the
'climate of Sardinia. But, on the other
'hand, as naturaliſts have adopted the
'length of the tails of lizards, in propor-
'tion to that of their bodies, as one of the
'diſtinguiſhing ſpecific differences, we can
'hardly attribute the great length of tail in
'the tiliguerta to accident. For inſtance,
'thoſe who have deſcribed the European
'green lizard, ſay that its tail equals the
'length of its body; while the ameiva of Ame-
'rica is characteriſed as having its tail three
'times as long as the body. We muſt not,

Green Lizard.

'therefore, conſider the tiliguerta as be-
'longing to the ſpecies of green lizard;
'and we may give it the following charac-
'ter; 'Having a ſlender tail twice the
"length of its body.' The ameiva has
'been deſcribed in nearly the ſame terms
'in the *Amoenitates Academicae:* We
'might, therefore, be diſpoſed to conſider
'the tiliguerta as of the ſame ſpecies; and
'it would not be at all wonderful to find
'in Europe an animal hitherto conſidered
'as peculiar to America. But, beſides that
'the exactneſs of the deſcription given in the
'Amoen. Acad. may be doubted, after that
'given by Gronovius, who ſays its tail is
'thrice the length of its body, the ameiva
'is diſtinguiſhable from our tiliguerta, by
'the number of ſcaly bands on the belly,
'which are very different in theſe two a-
'nimals. We may therefore determine,
'that the tiliguerta reſembles both the a-
'meiva and the green lizard; but is an in-
'termediate ſpecies, which muſt be added
'to that diviſion of the genus which Lin-
'naeus has diſtinguiſhed as having their
'tails

Green Lizard.

'tails furrounded by numerous rings of 'ſcales, *cauda verticillatae*. This animal 'is more common in Sardinia than is the 'ordinary green lizard in Italy. It is like-'wiſe extremely innocent in its manners, 'and is found in the graſs, and upon walls 'in the country *.'

It may be proper to obſerve, that the length of the tails, the verticillated or ſtaged form of theſe tails, and the number of ſcaly bands on the belly, are all ſubject to variation, and cannot be conſidered as permanent characters. After carefully examining a great number of individuals of various ſpecies, we have been ſo thoroughly convinced of this variability, that we have never uſed theſe characters for diſtinguiſhing the ſubdiviſions of the genus; nor even for marking the ſeveral ſpecies, except where theſe differences were very conſiderable. We have never, therefore, mentioned any preciſe length or proportion of the tail, or any abſolutely fixed number of

 bands,

* Cetti, Hiſt. Nat. Amph. Sard. 15.

Green Lizard.

bands, as distinctive specific characters; but have rather endeavoured to ascertain the exact form and arrangement of the scales on the tail.

ART. XX. *THE RED-HEADED LIZARD* *.

Red-headed Lizard.

THE lizard to which this name is given is found in the island of St. Christophers in the West Indies, and its description was transmitted by M. Badier. It has five toes on all the feet, and the belly is covered by half-rings or bands of scales, so that it falls to be arranged under the third division of the genus †. It is of a very deep green colour, mixed with brown; the sides of the head and neck, and part of the upper surface of the head being red. There are several transverse waved black streaks

* Piloris, Tête-rouge, Anolis de terre.—The name of *Anolis* has been given, in America, to several different species of lizards, as may be seen in the various articles of this genus.

† See the systematic table of oviparous quadrupeds, at the beginning of this volume.

ſtreaks on the back. The throat is white, and the breaſt black. A longitudinal ſtripe extends on each ſide, compoſed of tranſverſe black ſtreaks. The belly is variegated with black, blue, and whitiſh longitudinal ſtripes. The ſcales on the upper part of the head are longer than thoſe on the back. The inſides of the thighs are provided with a row of ſmall tubercles, ſimilar to thoſe on the nimble lizard and ſeveral other ſpecies. Red-headed Lizard.

In the individual deſcribed by M. Badier, the body meaſured one inch in diameter, at the thickeſt part, and one inch eleven lines in length; the tail being ſeven inches eight lines long, and was ſurrounded by rings of ſcales. The hinder legs meaſured two inches and one line to the firſt joint of the toes. It lives on inſects, and grows to three times the ſize of the individual here deſcribed.

ART. XXI. *THE CORDYLUS* *.

Cordylus.

THE ſpecies of lizard which forms the ſubject of this article is found in Aſia and Africa, and appears likewiſe to inhabit the ſouth of Europe, as Ray mentions having met with it near Montpellier. The name of cordylus, which has been given to this ſpecies, and which is excluſively appropriated to it by Linnæus, has likewiſe been applied by ſome writers to ſeveral other ſpecies, and particularly to the dragon, already deſcribed. The following deſcription is formed from ſeveral individuals, preſerved in the Royal Cabinet.

The head is ſomewhat triangular, enlarged at the back part, and very much flattened;

* Le Cordyle. Encycl. Method.

Lacerta Cordylus: Having a ſhort tail, ſurrounded by rings of ſharp pointed and denticulated ſcales; the body being ſmooth. Syſt. Nat. ed. Gmel. i. 1060. G. 122. ſp. 9. Amoen. acad. i. 132. 292. Gronov. Muſ. ii. 79. n. 55. Ray, ſynopſ. 263. Seba, muſ. i. t. 84. f. 3. 4. & ii. t. 62. f. 5. Laurent. amphib. 52. n. 81.

tened; being covered on the top and ſides by large ſcales. The two jaws are covered by two other rows of large ſcales, and are armed with ſmall ſtrong ſharp teeth of an equal ſize. The noſtrils are ſmall; and the openings of the ears are narrow, being ſituated at the two extremities of the baſe of the triangle, of which the muzzle forms the apex. The body is much flattened; the belly being covered with tolerably large and almoſt ſquare ſcales, arranged in half rings or tranſverſe bands. The ſcales on the back are larger than thoſe on the belly, and are likewiſe almoſt ſquare; thoſe on the ſides are all ridged, giving the flanks a prickly or ſpinous appearance. The tail is almoſt equal in length to the body; and the ſcales, which cover it, in overlapping circles, have each a prominent ridge, terminating in a kind of lengthened prickle, which is provided with a very ſmall ſpine at each ſide. Theſe ſcales, being of conſiderable length, and riſing up at their ends, form very diſtinct waved rings, ſomewhat diſtant from each other, giving the tail the Cordylus.

Cordylus.

appearance of being compoſed of ſeveral ſtages or portions. In one female individual, the tail of which was entire, we counted nineteen of theſe circles. The ſcales which cover the legs reſemble thoſe on the tail, being ridged longitudinally, and ending in ſharp points. All the feet have five toes on each, all of which are armed with claws. The colour of the ſcales is blue, more or leſs mixed with cheſnut in blotches or ſtripes.

Linnæus deſcribes the body of this ſpecies as ſmooth, which muſt be underſtood as applying to the back and belly, when compared with the legs and ſides, and eſpecially with the tail. On the inſides of the thighs, there are ſimilar rows of tubercles with thoſe already deſcribed on the guana, nimble lizard, green lizard, &c. In one individual of this ſpecies, which may be conſidered as a variety, the ſcales on the back were conſiderably ſmaller than in the other ſpecimens.

ART.

ART. XXII. *THE ANGULAR LIZARD* *.

Angular Lizard.

LINNÆUS, quoting Rolander, firſt publiſhed a deſcription of this ſpecies, which inhabits America. One of the principal characters which diſtinguiſh this lizard is, that the tail, which is one half longer than the body, preſents ſix diſtinct flat ſides, bounded by an equal number of longitudinal ridges at the angles. The head is likewiſe remarkable, having the appearance of being cut abruptly at its hinder part, where the ſkin forms ſeveral tranſverſe ridges. All the ſcales covering the body are pointed, and have elevated ridges, except thoſe on the belly. The animal can erect theſe ſcales at its pleaſure, and is then all over briſtled with ſmall ſharp ſpines. The under part of the throat is covered by two large round ſcales. The general colour

* L'Hexagone, ou l'Exagonal. Encycl. Method.

Lacerta Angulata: Having a long ſix-angled tail, covered by ridged and ſharp pointed ſcales. Syſt. Nat. ed. Gmel. i. 1061. G. 122. ſp. 19.

Angular Lizard.

lour of this ſpecies is reddiſh brown, and its ſize is ſmall.

Not having ſeen a ſpecimen of this ſpecies, we can only preſume that its belly is covered by tranſverſe half rings or bands of ſcales *: Should this not be the caſe, it ought to be placed in the ſubſequent diviſion of the genus inſtead of this.

ART. XXIII. *THE AMEIVA* †.

Ameiva.

THE natural hiſtory of this ſpecies labours under more ambiguities than that of any other oviparous quadruped. The

* It is probable that theſe half rings are wanting in this ſpecies; both becauſe the circumſtance is omitted in the Syſtema Naturae, and becauſe it is there placed in a ſubdiviſion of the genus, named *Stelliones*, which is characteriſed by the back and tail, ſometimes the whole body, being covered by pointed or denticulated ſcales; while a very different ſubdiviſion, called *Ameivae*, or *Sepes*, is diſtinguiſhed by the ſquared ſcales forming half circles on the belly, and with a double collar of ſcales on the under part of the neck.—T.

† L'Améiva. Encycl. Method.

Lacerta Ameiva: Having a long tail, ſurrounded by rings

The name Ameiva, or Ameira, has been applied to other lizards belonging to very different ſpecies. The real ameiva has received a number of names in different countries; ſuch as Temapara, Taletec, and Tamacolin; which names have likewiſe been applied to other ſpecies, particularly to the guana: Beſides theſe, the animal itſelf is liable to conſiderable variation in its colours, according to its age and ſex, and to the climate in which it lives, or to the ſeaſon of the year; ſo that different individuals of the ſame ſpecies have been conſidered as forming as many diſtinct ſpecies. Ameiva.

On

rings of ſcales; a double wrinkled collar on the under ſide of the neck; and thirty ranges or half rings of ſquared ſcales on the belly. Syſt. Nat. ed. Gmel. i. 1070. G. 122. ſp. 34. Amoen. acad. i. 127. 293. Muſ. ad. frid. i. 45. Gronov. muſ. ii. 80. t. 56.—Lacertus indicus. Cluſ. exot. 115. Ray, quadr. 270.—Lacertus major viridis. Edw. av. t. 202. 203. Worm. muſ. 313. —Lacertus major cinereus maculatus. Sloan. jam. ii. 333. t. 273. f. 3. Seba, muſ. 1. t. 85. f. 2. 3. t. 86. f. 4. 5. t. 88. f. 1. 2. t. 96. f. 2. 3. ii. t. 63. f. 4. t. 103. f. 4.—Seps ſurinamenſis. Laurent. amphib. 59. n. 98.—Large ſpotted ground-lizard. Brown, jam. 462.

Ameiva. On purpoſe to reſtore preciſion to this part of natural hiſtory, the name Ameiva is here excluſively appropriated to a lizard that is found in both Americas, and which has conſiderable connection, in ſeveral reſpects, with the nimble lizard and the green ſpecies of our more temperate regions. At firſt ſight, it may be confounded with one or other of theſe; but a very ſlight examination is ſufficient to point out the difference. It wants the double collar, compoſed of large ſcales, which is always found in theſe two other ſpecies; inſtead of which, the ſkin on that place, covered only by ſmall ſcales, forms one or two tranſverſe wrinkles or folds. This differential character has been very happily applied by Linnæus; but, in the following deſcription, we ſhall add ſeveral others, from an inſpection of ſeveral individuals that are preſerved in the Royal Cabinet.

The head is more lengthened and more flattened at the ſides; its upper part is narrower; and the muzzle more pointed, than

in

in theſe two other ſpecies. The tail is generally longer in proportion to the body. Ameiva.

The ameiva grows in general to a ſize nearly equal to that of our green lizard. The individual from which we deſcribe the ſpecies, and which was ſent from Cayenne by M. Léchevin, is twenty-one inches long, from the tip of the muzzle to the tip of the tail; and of this the tail meaſures twelve inches and a half: The circumference of the body, where thickeſt, is four inches and three quarters. The mouth opens as far as behind the eyes; and the jaws, which are covered by a double row of large ſcales, are armed with a great number of very ſmall teeth, which reſemble ſomewhat thoſe of the guana, the ſmalleſt being towards the muzzle. The top of the head is covered with large ſcales, as in the green and nimble lizards. The upper part of the body and of the legs is covered with ſcales of ſo ſmall a ſize, as to be hardly ſenſible; but thoſe which cover the under part of the body are large, ſquare, and ranged in tranſverſe rows or bands. The tail is ſurround-

ed

Ameiva. ed with rings of ſcales, of a long four-ſided figure. The inſides of the thighs have each a row of tubercles. The toes are long, ſeparated from each other, and armed with tolerably ſtrong claws.

It has been already mentioned, that the colour of this ſpecies varies conſiderably, according to age and ſex, to peculiarities in the climates of the different countries in which it is found, and to the temperature of the atmoſphere and ſeaſon of the year in the ſame countries: In general, however, it ſeems that the ground or prevailing colour is green or greyiſh, leſs or more diverſified with ſpots, blotches, or ſtreaks of more lively colours; and theſe are ſometimes ſo diſpoſed as to form round ſpots, or eyes; from which circumſtance both this and the green ſpecies have ſometimes been called the *Argus* lizard. Perhaps, like the lizards of our country, the ameiva may form a family, in which the grey and the green individuals ought to be conſidered as permanent varieties: But it would require more accurate and more extended obſerva-

tions

tions than have yet been communicated, to enable naturaliſts to decide preciſely on this queſtion. Ameiva.

Ray * and Rochefort ſpeak of lizards, under the name of *Anolis*, or *Anoles*, which are in continual motion during the day, and retire in the night-time into holes and chinks, from which they emit a cricking noiſe, that is louder and more intolerable than that of the flying cricket. The account given by Rochefort † is as follows: 'The anolis is very common in all the 'houſes, and is much of the ſame ſize and 'length with the ordinary lizards of France; 'but the head is more lengthened, the ſkin 'is yellowiſh, and the back is variegated, 'from the top of the head to the tip of the 'tail, with ſtreaks of blue, green, and grey. 'They conceal themſelves all night in holes 'under ground, making a more penetrating noiſe than that of crickets; and in the 'day-time they are in perpetual motion, 'roaming about in queſt of food.' As theſe

* Synopſis animalium. p. 269.

† Hiſtoire des Antilles. i. 300.

Ameiva.

theſe names have been applied to ſeveral different ſpecies, and as neither Ray nor Rochefort have deſcribed the lizards they mention, with ſufficient preciſion to aſcertain their exact ſpecies, it is recommended to travellers and others in theſe countries, the Weſt Indies, to make more accurate obſervations on theſe animals, to enable future naturaliſts to allot them their proper place in ſyſtem.

The ameiva is not confined to America, but is likewiſe found in the Old World; for we have ſeen a ſpecimen, brought from India by M. le Cor, the colour of which was a very beautiful green, mixed in different places with yellow. Gronovius has deſcribed, under the name of Anolis, a lizard of Surinam, evidently of the ſame ſpecies with the ameiva of Cayenne.

ART. XXIV. *THE LION LIZARD* *.

IN the trivial name of this ſpecies, the emblem of ſtrength and power is applied to weakneſs, the name of the king of animals being given to a very ſmall lizard: It may, however, be preſerved, as this name has as frequently been uſed to indicate the poſſeſſion of pride as of power. The lion lizard almoſt always carries its tail in a round reflected form, which gives it a haughty appearance, and has induced the Britiſh inhabitants of Carolina to affix to it the name of lion; and in this they have been imitated by ſeveral naturaliſts. Lion Lizard.

This ſpecies, which is found in Carolina, does not differ very much from our nimble lizard. Three white lines, and an equal number of black, run along each ſide of

* Le Lion. Encycl. Method.

Lacerta ſexlineata: Having a long tail, ſurrounded with rings of ſcales; the back being marked with ſix white lines. Syſt. Nat. ed. Gmel. i. 1074. G. 122. ſp. 18. Cateſby, Nat. Hiſt. of Carol. ii. t. 68.

Lion Lizard.

the back, the middle of which is whitiſh. It has two tranſverſe wrinkles on the under part of the neck. The inſides of the thighs have each a ſimilar row of tubercles with thoſe already mentioned on the guana, nimble lizard, green lizard, ameiva, &c. The tail is long, and tapers gradually to a point.

The lion lizard is not at all noxious or dangerous. Having the legs of conſiderable length, it is very nimble, and runs about with great agility. It frequents very much the holes of rocks near the ſea, and becomes very frequently the prey of large ſea fowl, notwithſtanding the nimbleneſs of its motions. It is not confined to Carolina, but is found in Cuba, Hiſpaniola, and the neighbouring iſlands.

Linnæus, to whom an account of this ſpecies was communicated by Dr Garden, conſiders it as forming a kind of intermediate link between the ameiva and the lizard, which is the ſubject of the enſuing article.

ART.

ART. XXV. *THE LACED LIZARD* *.

Laced Lizard.

THIS lizard is found in India and Guinea, and likewiſe inhabits America, two individuals having been ſent to the Royal Cabinet from Martinico. Linnæus has very properly deſcribed it as being nearly allied to the ameiva; the under part of its body being covered in a ſimilar manner, by tranſverſe bands of ſcales. It is, however, conſiderably ſmaller than that ſpecies. The inſides of the thighs have rows of tubercles, ſimilar to thoſe already mentioned in the guana and ſeveral other ſpecies. The tail is ſlender, and is longer than the body. The ground colour of the body is green, of various degrees of darkneſs; and, according to Linnæus, the back

 is

* Le Galonné. Encycl. Method.

Lacerta lemniſcata: Having a long round tail; the back being marked with eight whitiſh lines. Syſt. Nat. ed. Gmel. i. 1075. G. 122. ſp. 39. Muſ. ad. frid. i. 47. Seba, muſ. i. t. 53. f. 9. t. 92. f. 4. ii. t. 9. f. 5.—Seps lemniſcatus. Laurent. amphib. 60. n. 103.

Laced Lizard.

is marked by eight longitudinal whitiſh ſtripes. On two individuals in the Royal Cabinet, there are nine of theſe lines; but this circumſtance ſeems liable to variety. The legs are ſpotted with white.

In the collection of M. d'Antic, there is a ſmall lizard, a variety of this ſpecies, which was ſent to him from St Domingo. The general colour is a very deep green, having eleven ſtripes of whitiſh yellow on the back, which unite into ſeven near the head, and into ten near the tail; on which laſt theſe lines gradually and inſenſibly diſappear. The whole length of this variety is ſix inches, of which the tail meaſures four inches and one line.

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